

Exploration of Gamification Teaching Mode in Primary School Mathematics under the Guidance of Core Literacy

Yinuo Du

Zhejiang Normal University, Jinhua, Zhejiang, 321004, China

Abstract: In the context of the new curriculum reform, primary school mathematics teachers need to adhere to the guidance of core literacy concepts, based on actual teaching situations, develop and implement effective teaching methods, and unleash students' learning initiative in order to comprehensively improve teaching quality and achieve the goal of cultivating students' core literacy. Practical teaching has shown that through the implementation of gamified teaching mode, students will develop a high learning interest, rich learning experience, and profound learning insights. In a free and happy teaching atmosphere, the good effect of combining education with pleasure can be achieved. In the process of constructing a gamified teaching model, teachers need to use game elements to stimulate students' interest in learning. Games can be used to help students consolidate their memory, cultivate mathematical thinking through game activities, and strengthen students' cooperative awareness through game teaching, ultimately enhancing teaching effectiveness comprehensively.

Keywords: Core competencies; Elementary school mathematics; Gamification teaching mode; Structure

1. Introduction

With the proposal and promotion of the concept of core literacy education, higher requirements have been put forward for teaching activities. Primary school mathematics teachers should be guided by the cultivation of core literacy, scientifically design classroom teaching content, reasonably formulate teaching plans, and ensure that teaching effectiveness meets the requirements of the new curriculum standards. Considering the age characteristics and learning psychology of primary school students, games are the activities they are most interested in participating in. Gamification teaching has also been widely applied in many subject teaching, playing an irreplaceable role in stimulating students' interest in learning. In the process of reforming and exploring teaching models, primary school mathematics teachers should pay attention to actively exploring the construction of gamification teaching models, based on specific teaching content, Choose to introduce corresponding game activities, so that students can achieve high-quality mathematics learning through active exploration games, allowing them to easily and happily learn mathematics.

2. Overview of Core Literacy and Gamification Teaching Mode in Primary School Mathematics

Core literacy is a new concept proposed in the new round of curriculum reform, which is a comprehensive ability that students should master in subject learning. It will have a significant impact on their learning and future growth. The primary school stage is a critical period for cultivating students' core literacy. For the subject of mathematics in elementary school, the connotation of core literacy is multifaceted and should include the following main contents: first, mathematical awareness. Primary school students need to understand and master some basic mathematical theoretical knowledge, develop a holistic understanding of the subject of mathematics, actively think and study mathematics, and gradually improve their ability to solve mathematical problems; Secondly, mathematical thinking. Primary school students should actively think throughout the entire process of mathematics learning. Through systematic learning of mathematics, with the continuous mastery of mathematical knowledge and skills, they need to learn from each other and learn by analogy when solving problems, in order to continuously improve their mathematical thinking ability; Thirdly, mathematical communication. Primary school students need to deepen their understanding and understanding of mathematics, communicate and apply relevant mathematical knowledge, such as using mathematical language such

as numbers, symbols, formulas, etc., in order to achieve deeper mathematical learning; Fourthly, mathematical applications. After theoretical learning of mathematical knowledge in the classroom, attention should also be paid to extracurricular practical applications, and the combination of theory and practice should be emphasized to encourage students to flexibly apply mathematical knowledge to solve practical problems, which helps to promote the comprehensive development of students' abilities[1].

For gamified teaching mode, as the name suggests, it is a fun teaching mode that combines game form with teaching interaction. This is clearly a breakthrough and innovation in traditional teaching mode. Due to the inclusion of game elements that students love in teaching, this teaching mode is highly welcomed by students. In the application process of gamified teaching mode, teachers can use game forms to showcase course knowledge content through careful design of teaching activities. This teaching method is more flexible and can attract students to think with interest. In a relaxed and cheerful teaching atmosphere, it can improve students' learning initiative and enthusiasm, and significantly improve teaching efficiency[2]. Under the traditional primary school mathematics teaching model, teachers neglect the analysis of primary school students' ability to accept and understand and their interests, mainly by imparting and explaining various mathematical knowledge. The entire teaching is dull and boring, and students have few opportunities to think actively. This will greatly affect intellectual development and be even more detrimental to the cultivation of learning interests. Based on this actual teaching situation, through the application of gamified teaching mode, students will master relevant knowledge by participating in game activities, which will generate a strong interest in learning and achieve the cultivation of thinking ability through active thinking.

3. The Construction Strategy of Gamification Teaching Mode for Primary School Mathematics under the Guidance of Core Literacy

3.1 Using game elements to stimulate students' interest in learning

Primary school students have a strong curiosity and are only interested in relatively new things, which provides a reference for the design of teaching activities for teachers. Primary school mathematics teachers should pay attention to grasping students' psychological characteristics, and attract students to actively learn in teaching activities. Only when students develop interest in learning can basic conditions be provided for the cultivation of core competencies. In the process of constructing a gamified teaching model, teachers should pay attention to combining with the psychological characteristics of primary school students, introducing game activities to stimulate students' thirst for knowledge. Driven by curiosity, students will demonstrate a motivation to explore unknown fields in the game. This can stimulate students' interest in mathematics learning and develop their intelligence by citing game elements in teaching. It can also greatly help in cultivating good logical thinking skills[3]. In the normal teaching process, teachers should actively explore teaching reform and design game activities based on students' psychological needs, in order to encourage students to show strong interest in learning and fully reflect the enormous value of gamified teaching.

For example, when teaching the content of "determining the position", teachers should pay attention to the use of game elements to stimulate students' interest in learning. The teaching goal of this part is to enable students to master the method of determining the position, and teachers can change the traditional teaching method of directly instilling knowledge. Based on the teaching content, a "seat grabbing" game should be designed, and several students should be selected to participate in the game activities, Other students who did not participate in the game should also watch the entire game process attentively and actively think about how to determine their position in the game. When students participate in game activities, they need to quickly grab a position and say their exact position, such as "3rd in row 2" and "1st in row 5", in order to successfully complete the game task. After the development of this fun game, it is obvious that the teaching has increased the fun. Some students have shown a strong interest in learning and a high enthusiasm for participation in the game. Other students who did not participate can also find the joy of mathematics learning, actively participate in thinking, and can also master the relevant mathematical knowledge of the designated position. Compared with traditional teaching methods, by applying game elements in this teaching approach, students have a higher interest in learning and achieve good learning outcomes. In a free and active teaching atmosphere, teacher-student relationships and classmate friendships will be deepened. Therefore, when designing gamified teaching, teachers must accurately grasp students' actual learning needs and ensure that game elements have high appeal to students, so that students can truly demonstrate a strong interest

in learning and achieve the expected teaching objectives.

3.2 Using Games to Help Students Consolidate Memory

For each classroom teaching, the teacher will summarize the knowledge content taught in the final stage. This is a very important link in classroom teaching, which can help students develop a comprehensive understanding of the knowledge learned, and help deepen understanding and consolidate memory of the knowledge, ensuring the teaching efficiency of the entire class. Teachers should pay attention to making full use of this last minute in the classroom, and through scientific teaching design, encourage students to achieve more in classroom learning. In regular classroom teaching, in the last few minutes, many students may become distracted and unable to concentrate, which may affect the overall order of the classroom. Therefore, teachers must recognize the importance of careful preparation to avoid serious impact on classroom efficiency. Guided by the concept of gamified teaching, primary school mathematics teachers can carefully construct a gamified teaching mode in this stage, organize games that help summarize classroom content and arouse students' interest, so that students will actively participate in the game. Through the game, students can consolidate and memorize relevant knowledge, and ultimately achieve good classroom summary and closing effects[4].

For example, after explaining the theoretical knowledge related to "graphic transformation", the classroom is about to enter the final summary stage. At this time, the teacher finds that many students have already shown a sense of classroom learning fatigue and gradually cannot concentrate on listening. Therefore, it is necessary to optimize and adjust the classroom teaching organization based on the actual situation of classroom teaching, and try to use games to improve the attractiveness of the classroom. Teachers can ask students to take out scissors and colored paper prepared before class, and carry out a Paper Cuttings game about graphics. First, let students cut out different shapes with colored paper, and then guide them to try to carry out various graphic transformations, such as through translation, rotation and other ways to group into parallelogram, while guiding students to carefully observe the transformation relationship between graphics, Multimedia courseware can be used to play images related to graphic transformations, so that students can practice through games. While consolidating and memorizing the knowledge they have learned, students' hands-on practical skills and mathematical thinking abilities will also be exercised, thereby helping to develop their core mathematical literacy.

3.3 Cultivating students' mathematical thinking through game activities

The subject of elementary school mathematics has significant thinking characteristics. To learn mathematics well, students need to have good mathematical thinking skills, otherwise they may encounter various learning difficulties, which will affect the improvement of their mathematical learning ability. In order to cultivate students' core mathematical literacy, primary school mathematics teachers need to make cultivating students' mathematical thinking a teaching reform goal. They should deeply explore and utilize various teaching resources, use rich game activities, promote students to better understand and master mathematical knowledge, guide students to think deeply and analyze, encourage divergent thinking, and improve their openness and flexibility of thinking. In such a fun teaching environment, We can gradually achieve the goal of cultivating students' mathematical thinking[5].

Firstly, it is important to focus on cultivating primary school students' computational comprehension ability, starting from lower grade mathematical calculations. For example, in the teaching of "addition and subtraction within 10", students are directly allowed to perform calculations that are relatively mechanical and monotonous. Teachers can use some physical objects to help students master computational theory, such as using a small stick to play games in mathematical learning and combining numbers and shapes, It can achieve the cultivation of students' mathematical thinking. In addition, primary school students are still in the stage of visualized thinking. In order to cultivate students' abstract thinking, attention should also be paid to the development of game activities, such as designing "find different" small games, encouraging students to carefully observe and compare and analyze two graphics. This will exercise students' information extraction and analysis and comparison abilities, which can achieve the effect of strengthening abstract thinking training.

3.4 Strengthening Students' Cooperative Awareness through Game Teaching

Under the guidance of core competencies, for the exploration of teaching reform in primary school

mathematics, teachers not only need to cultivate students' knowledge and abilities, but also need to cultivate their comprehensive abilities and qualities[6]. Among them, it is necessary to enable students to understand competition and cooperation in learning. This not only helps to improve learning efficiency, but also has a profound impact on students' growth and development. In the process of exploring the application of gamified teaching mode, teachers should fully understand the actual situation of all students in the class, including interests, personality differences, thinking abilities, mathematical foundations, etc., scientifically group students, and then organize students to participate in game teaching as groups. In order to achieve common game tasks and learning goals, members of each group need to unite and cooperate, Mutual assistance and mutual promotion can be achieved through fair competition among various groups, which can motivate students to actively participate in cooperative games and ultimately complete learning tasks through cooperation. This not only gains knowledge in the game, but also helps to strengthen cooperation awareness. It can create a strong learning atmosphere in the class, and every student can achieve learning progress and growth and development[7].

For example, in the learning of knowledge related to "three-dimensional graphics," students need to have a preliminary understanding of three-dimensional graphics such as cuboids, cubes, and cylinders. Teachers can display teaching aids such as building blocks in the classroom and require each group to participate in a game of building blocks. Each group's building blocks are the same. After the game officially starts, when the teacher describes the characteristics of a certain three-dimensional graphics, Each group needs to work together to complete the corresponding stacking block task, such as "six equal three-dimensional shapes". Students need to quickly respond and use the blocks to build a cube as soon as possible. Each group can engage in a competition to determine which group can complete the game task quickly and accurately. The winning group will receive a certain reward, and the group with the worst performance will receive a small punishment. In this teaching process, for the collective honor of the group, all students will fully participate in the game activities, with clear division of labor and mutual cooperation.

4. Conclusion

In summary, when exploring the gamified teaching mode, primary school mathematics teachers should design the form of game development based on core literacy orientation, and encourage students to actively learn and explore mathematical knowledge in a more relaxed and enjoyable atmosphere, which will greatly improve teaching efficiency. For many primary school students, they lack awareness of self-directed learning and have limited thinking abilities, which requires teachers to provide correct guidance to students. They should scientifically organize and implement gamified mathematics classroom teaching, truly play the role of students as the main body, and make up for the shortcomings of traditional teaching models. They should continuously improve teaching activities to ensure that the value of gamified teaching can be fully demonstrated.

References

- [1] Hao Zhiyun. *How to Build an Efficient Primary School Mathematics Classroom: Exploring the Integration of Educational Games and Primary School Mathematics* [J]. *Academic Weekly*, 2019 (32): 62
- [2] Tang Lili. *Thinking Play: Design and Implementation of Primary School Mathematics Games Microcourse* [J]. *Mathematics World*, 2019 (10): 90
- [3] Fu Jian. *Integrating Education with Joy: The Application of Games in Primary School Mathematics Teaching* [J]. *New Curriculum*, 2019 (10): 117
- [4] Yan Xiangjie. *Problems and Solution Strategies in the Implementation of Mathematical Game Teaching in Lower Grades of Primary School* [J]. *Mathematics World*, 2020 (10): 51-52
- [5] Wang Min. *Implementation of Games in Primary School Mathematics Teaching under Core Literacy* [J]. *Exam Weekly*, 2020 (09): 150
- [6] Chao Hongkai. *Research on the Effective Development of Gamification in Primary School Mathematics under the Background of Core Literacy* [J]. *Teacher*, 2019 (21): 90-91
- [7] Lalangji. *Reflections on Primary School Mathematics Game Teaching under Core Literacy* [J]. *Policy & Scientific Consult*, 2019 (07): 138