

Research on the Application of Educational Drama in Primary School Mathematics Teaching

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ABSTRACT

With the implementation of the new curriculum standards in the compulsory teaching stage, schools and teachers are trying various teaching strategies to continuously explore traditional primary school mathematics classrooms and transform teaching models in primary school mathematics classrooms, thereby helping students enjoy knowledge in a more interesting and diverse teaching environment. Among them, the use of educational drama as a strategy can not only enhance the enthusiasm of primary school students for mathematics learning, but also improve the quality of classroom teaching, enhance primary school students' mathematical thinking and interest in mathematics, and thereby enhance students' efficiency in learning mathematics.

Keywords: *Educational drama, Primary school, Mathematics teaching.*

1. INTRODUCTION

In the context of modern education, the application of educational drama as a teaching method in primary school mathematics teaching classrooms is becoming increasingly widespread, and the teaching results achieved are also quite impressive. Educational drama refers to the integration of dramatic elements into teaching through the organization of mathematical knowledge and course content by teachers, allowing students to grow mathematical knowledge and improve their logical thinking ability in activities, thereby promoting the improvement of their mathematical core literacy. Nevertheless, due to the fact that educational drama is mostly used in primary school English and Chinese classrooms, many scholars still question whether educational drama can be used in primary school mathematics classrooms. However, the author believes that the learning in primary school mathematics classroom is not only the learning of logical thinking ability and the growth of mathematical knowledge, but also the instillation of mathematical cultural connotations and the cultivation of mathematical core literacy and mathematical thinking. In this regard, teachers' attempts to use educational drama teaching methods can make up for the shortcomings in cultivating mathematical emotional attitudes and

values in traditional primary school mathematics classrooms. Based on this, on the one hand, this paper analyzes the classroom situation of primary school mathematics and the role of applied educational drama strategies, and on the other hand, it puts forward the application strategies of educational drama in primary school mathematics education from multiple perspectives.

2. THE APPLICATION STATUS OF EDUCATIONAL DRAMA IN PRIMARY SCHOOL MATHEMATICS TEACHING

At present, various teaching strategies are being tried in primary school mathematics classrooms to continuously explore traditional primary school mathematics classrooms and transform teaching models, in order to help students enjoy knowledge in a more interesting and diverse teaching environment.

2.1 *Lack of Practical Connection Between the Content and Application of Primary School Mathematics Teaching Under Traditional Teaching Models*

With the deepening of the new curriculum reform, new requirements have been put forward

for the teaching of primary school mathematics courses. The connection between aesthetic education and cultural subjects has become increasingly close, and the traditional teaching mode of "teachers speak, students listen" can no longer meet the actual needs of cultivating students' mathematical thinking and interest. Optimizing mathematics classroom teaching has become inevitable. But now in mathematics classrooms, there is a problem of insufficient connection between theoretical knowledge and practical life in the process of teaching knowledge, which greatly reduces students' ability to mathematize life problems, explain life phenomena with mathematical knowledge, and solve related life problems, leading to students' questions about "what is the use of learning mathematics".

Students can only memorize theorems, concepts, and rules, and can do calculation problems without knowing the mathematical culture and stories behind them. It is difficult for them to develop interest in mathematics that is inherently highly abstract and logically rigorous. The strategy of educating drama mainly relies on the educational significance of drama to assist teaching. As drama is a product of human common emotions and acquired experiences, as long as a drama is done by humans, it has its purpose of conveying ideas, allowing the audience to accept the creator's viewpoint while watching. It can be seen that in addition to the purpose of entertainment, drama also contains educational and civilized enlightenment, which is beneficial to society. In China, there are theories that combine education with entertainment, which all demonstrate that drama is not only a way of entertaining oneself, but also an activity with educational significance. Naturally, the content of educational drama is easily accepted by students unconsciously. Therefore, the use of educational drama as a teaching method can effectively enhance the fun of mathematics classrooms, enrich students' imagination and creativity, and establish the connection between mathematics and real life, enabling students to learn to use innovative, divergent, visual, and hypothetical mathematical thinking to solve relevant problems in reality, and obtain a sense of satisfaction in mastering skills psychologically.

2.2 Primary School Teachers Have a Low Frequency of Applying Educational Drama Teaching Method in Mathematics Classrooms

Currently, under the promotion of the new curriculum reform, educational drama has been increasingly attempted in primary school mathematics classrooms and there have been certain teaching results. However, due to the current lack of fundamental changes in the selection methods for students, in many current primary school teaching processes, the traditional teaching mode in the classroom is still favored by teachers in mathematics classrooms. When setting teaching objectives for each chapter, teachers often focus on repetitive training in practices and exercises while neglecting the cultivation of students' comprehensive mathematical abilities, mathematical emotions, and mathematical thinking abilities. Therefore, many teachers are not comprehensive enough in setting teaching objectives and can not fully interpret the teaching objectives required by the new curriculum standards. They only focus on "hard" knowledge points such as theorems and arithmetic, while neglecting "soft" knowledge points such as mathematical emotions and abilities. These are not conducive to students forming good learning habits, which will annihilate their autonomy and creativity. Especially when students enter the senior stage and the mathematical knowledge gradually becomes difficult, this teaching method that only emphasizes the mastery of knowledge points will make it even more difficult for students to keep up with the teacher's teaching progress, causing students to gradually lose interest in the subject of mathematics and no longer have enthusiasm for learning mathematics.

And because the use of educational drama in teaching places more emphasis on cultivating students' thinking abilities and weakens the extensive training in computation, it is difficult to quickly improve students' grades in the short term. At the same time, because educational drama has a high requirement on teachers' ability to adapt to changes in the classroom, and there are few mathematical lessons to refer to, most teachers have not received systematic training, and they do not fully grasp drama knowledge. Therefore, even if teachers are willing to use educational drama method for teaching, the results are uneven. Moreover, some teachers actually have a biased view on the teaching method of educational drama,

believing that educational drama is only a way to cultivate talents such as actors. They believe that its application does not meet the value requirements of the social era, and has little effect on teaching knowledge points, resulting in a lower frequency of application in the classroom. In addition, educational drama has the characteristics of gamification, lifelization, and thematization, so in primary school mathematics classrooms, the application frequency of teaching educational drama method is relatively low compared to traditional teaching methods.

3. THE SIGNIFICANCE OF APPLYING EDUCATIONAL DRAMA IN PRIMARY SCHOOL MATHEMATICS TEACHING

The application of educational drama as a strategy can not only enhance primary school students' enthusiasm for mathematics learning, but also improve the quality of classroom teaching, enhance primary school students' mathematical thinking and interest in mathematics, and thereby enhance students' efficiency in learning mathematics. Moreover, the application of educational drama courses in primary school mathematics not only forms a diversified and innovative teaching model, but also has important significance for the inheritance of mathematical culture.

3.1 Educational Drama Adapts to the Development Trend of Primary School Mathematics Curriculum

In the "Standards for mathematics Curriculum in Compulsory Education" (2022), it is clearly pointed out that the teaching objectives of primary school mathematics curriculum are: "mathematics is not only a tool for calculation and reasoning, but also a language for expression and communication." "It is necessary to pay attention to the forefront of mathematical discipline development and mathematical culture, inherit and promote the excellent traditional culture of China." "It is necessary to form correct emotions, attitudes, and values of students based on their development and guided by core competencies." In this context, it is particularly important for students to improve their awareness of mathematical application and overall control of mathematical culture. Among them, applied consciousness requires students to consciously apply mathematical knowledge and

methods to explain life phenomena and solve practical problems on the one hand, and to recognize that mathematics exists everywhere in life, and be able to abstract life problems into mathematical problems and use mathematical methods to solve them on the other hand. The mathematical culture mainly refers to the history of the formation and development of mathematics and mathematicians. That is, through the role playing strategy in the educational drama, teachers can dig the story behind mathematicians, guide students to imagine and build a mathematical scene that can be observed, played and discussed, and participate in the simulation of playing the role of mathematicians to explore the inner world of the role, so as to inspire students to understand and comprehend abstraction concepts, definitions and theorems, and then arouse students' interest in thinking and learning. Taking the People's Education Press sixth grade volume I "Circle" as an example, teachers can let students help the teacher who plays Zu Chongzhi to solve the difficulties encountered by Zu Chongzhi when calculating Pi in the simulation process, and experience the social environment of the era Zu Chongzhi lived in to produce the experience of "this is real". By deeply understanding the concept of circle and the calculation method and deduction process of Pi, students involuntarily feel close to mathematicians, and as a result, they will be more willing to accept the knowledge points that they are deeply impressed with. Under such teacher-student cooperation, students not only actively master calculations and reasoning, but also improve their expression and communication skills through observation and discussion of the teachers' roles.

3.2 Educational Drama Conforms to the Cognitive Development Laws of Primary School Students

The primary school stage corresponds to a child's 6-12 years of age. From Erickson's stage theory of psychological and social development, during this period, children must master important communication and learning skills to gain a sense of diligence. Conversely, if children do not master these skills during this period, they will develop a sense of inferiority, which will affect their future attitudes and habits towards learning and work. Therefore, it is particularly important to cultivate children's interest in mathematics and mathematical thinking at this stage. Research has shown that when students' classroom experiences during childhood are enjoyable and inspiring, they are

more willing to experience and explore more challenging mathematics as they enter higher grade classrooms, and will not experience negative emotions such as anxiety and tension due to incorrect answers. Based on this, educational drama is undoubtedly a teaching strategy that conforms to the cognitive development laws of primary school students and can promote students' desire for active learning. In mathematics classrooms, abstract algorithms become more lifelized by allowing students to practice them firsthand, establishing an invisible connection between the knowledge in mathematics textbooks and real life. Combining the mathematics knowledge with real-life examples also makes it easier for students to master knowledge and skills. For example, in the teaching of "Understanding the Addition and Subtraction from 6-10" in the first grade volume of the People's Education Press, based on the students having already learned the addition and subtraction methods of 1-5, the teacher can have students group up to play the role of a vendor and a consumer, and give students who play the role of a vendor goods (priced by the teacher) and students who play the role of a consumer 10 coins respectively. Based on the cognitive level of lower grade elementary school students, the teachers can rehearse the "buying and selling" sketch, and guide students to reflect on the content of the sketch, discuss and exchange ideas, so as to narrow the distance between algorithms and students, allowing them to master the skills of daily communication and knowledge learning in practice, and gain a sense of satisfaction and diligence from it.

3.3 Educational Drama Is an Implementation of the "People-oriented" Educational Concept

The new curriculum reform has always emphasized the modern educational ideology of "student-centered, teacher led, and fully leveraging students' initiative". Only by becoming curious about the content they are learning can students stimulate their thirst for knowledge. Traditional educational philosophy takes teachers as the main body and students as the objects both in academic education and moral education. Always being taught by teachers, students listen, learn, and even have been demanded to follow every word without hesitation. The result is that students' initiative and enthusiasm have been suppressed, and their creative thinking and potential cannot be fully utilized, which is not conducive to the cultivation of creative talents. From this perspective, teachers cannot

completely control the classroom and cannot completely let it go, so making students have the impulse to "want to learn" while "being able to learn" has become the primary task of teachers. Based on cultivating students' cultural foundation, independent development, and social participation, it is necessary for teachers to fully integrate the humanistic foundation and rational thinking of mathematics. Educational drama advocates a people-centered approach, establishing the curriculum in a fictional "real world", which can allow students to explore and test their ideas, think and solve various problems between humans, humans and nature, humans and society, and perceive the world and gain cognition through experience and learning. In such a classroom, the teachers' focuses are more on the students themselves, completely returning the classroom to the students. By using educational drama to elevate moral education courses and subject teaching, it is a democratic and free classroom culture that not only provides greater exploration space for teachers and students, but also makes the classroom a field for deep communication between teachers and students, being a happy garden for emotional integration and virtue cultivation. Therefore, it can be seen that the educational drama curriculum is non-utilitarian, and the entire educational process is carried out in a subtle way, unlike other educational methods that have immediate effects. From a long-term perspective, educational drama is the optimal teaching method that can promote the comprehensive and comprehensive development of children.

4. THE APPLICATION STRATEGIES OF EDUCATIONAL DRAMA IN PRIMARY SCHOOL MATHEMATICS TEACHING

"Drama is the most concrete form in which art can recreate human situations and relationships between people." Strategies including integrating educational drama strategies into the educational field of primary school mathematics teaching, utilizing drama elements and techniques, and using educational drama practices such as role playing, teachers joining in the play visuals, and freeze frame, are beneficial for students to delve deeper into problems in the created mathematical context, from shallow to deep.

4.1 "Role Playing" — Organizing the Knowledge and Clearing the Content

The mode of educational drama is fully applied in primary school mathematics education to improve the traditional mathematics teaching mode, improve students' perception of mathematics, and promote students to experience the interest of mathematics knowledge more deeply. Moreover, at this time, children are in a period of liking to express themselves and themselves. When they develop a sense of identification with the role they play, they unconsciously want to imitate the behavior of the role. At this time, as long as the teachers provide some positive guidance, students will be more active in learning mathematics curriculum and easier to understand the knowledge points they have learned. In the process of applying educational drama, teachers sometimes rehearse drama activities based on learning groups. Before the formal performance, teachers can arrange for students to play different roles in the drama and create interesting lines. Based on textbook knowledge, they can create witty drama scenarios; and sometimes they can participate in and guide students to perform specific actions or speak specific words with a sense of role. Both aim to enable students to master more mathematical knowledge and fully apply it in their daily lives.

For example, in the teaching activity of "Location" in the first grade volume I of the People's Education Press, the teachers need to clarify the knowledge points and teaching objectives of this lesson firstly, so that students can understand the proprietary names of different location words, clarify the different directions the students represent secondly, and let students practice according to the teacher's prompts finally. Through role-playing and dramatic games, students can practice repeatedly in different theatrical contexts, which will not only enhance their understanding of the direction without generating boredom and repetitive boredom, but also allow them to personally experience the connection between knowledge and life, and not only learn knowledge at the conceptual level, but also more firmly grasp the knowledge points.

4.2 "Teachers Joining in Drama" — Expanding Forms and Increasing Interest

Teachers are an important link between connecting students and textbook knowledge.

When teachers play a specific role and lead students into the virtual world, students will have a sense of role identity psychologically. Compared with students' role playing alone, students will be more likely to "enter in the drama". Moreover, children of this age are full of enthusiasm and curiosity towards external things. When there are other forms of classroom training that differ from listening, speaking, reading, and writing, students will have greater enthusiasm to explore. In addition, teachers often play the role of the weak and need to seek help from students, which caters to children's enthusiastic attitude towards others and subtly educates students to be willing to help others.

Taking the classroom teaching of the fourth volume of the People's Education Press, titled "Mathematics Wide Angle - Pancake Problem", as an example, teachers can use simple props to construct kitchen spaces related to the "pancake problem" scenario in this lesson, and shape the image of a new chef as a weak person. Students actively enter the constructed space to help the teacher win the competition, and then use their own hands to understand the application of addition in practical problems, obtaining a sense of satisfaction in mastering knowledge from practice. The teachers raise questions, the students operate the props, personally demonstrate the process of pancake making, and discover the optimal strategy.

4.3 "Freeze Frame" — Promoting Understanding and Strengthening Thinking

In the textbooks of mathematics curriculum, there are many interesting and lifelized illustrations used as textbook questions. For these "picture problems", the pattern of "freeze frame" in educational drama teaching strategies can be used to facilitate students' understanding of the problems. Freeze frame, as the name suggests, is to solidify the appearance of life through the pause function of the player. Students use their body shapes to collectively replicate or create a visual representation of life and events. Students can copy images from photos or picture books, create visuals according to text instructions, collaborate through interactive group discussions, or improvise the use of body involvement to create a fixed frame image of a scene. From this, it can be inferred that freeze frame is the three-dimensional transformation of two-dimensional problems, which can broaden students' imagination, promote the transformation of students' thinking abilities, and break the barriers

between the inherent knowledge in textbooks and practical applications in daily life.

For example, in the teaching of "Understanding Numbers from 10 to 20" in the first grade volume I of the People's Education Press, there is an illustration problem. In the problem scenario of "queuing" in the textbook, students cannot abstract the ordinal numeral "which number" and cannot understand the meaning of "how many people are between" in the queuing scenario. Therefore, students are still unable to reflect in their minds how many people are between the 10th and 15th, ignoring the problem situation and directly using numbers for subtraction calculations, resulting in incorrect problem-solving. Using the practice of "freeze frame" in educational dramas, students are asked to play the story scenario of queuing, and then guide other students to observe and calculate. Students can quickly understand why subtraction cannot be done directly.

When the teachers select young actors, the classroom suddenly quiets down, and the students sit upright because they all know that the teacher wants to select the best performing classmates as young actors, and each student wants to show off on stage. The educational function of educational drama is also reflected, which is helpful for classroom management.

5. CONCLUSION

Overall, educational drama has been recognized by many teachers in primary school mathematics teaching and there has been a lot of practice, achieving relatively good results. Therefore, primary school mathematics teachers can fully integrate educational drama with curriculum teaching, it is necessary to use different styles of educational drama to align with the teaching goals of cultivating students' curiosity and curiosity towards mathematics, understanding the value of mathematics, appreciating the beauty of mathematics, enhancing their interest in learning mathematics, establishing confidence in learning mathematics well, cultivating good learning habits, and developing a scientific spirit of self-reflection and exploration, so as to enhance students' enthusiasm for classroom learning, mobilize their subjective initiative, and guide them to participate, thereby enhancing their perception of mathematics, enhancing their interest in mathematics, and enhancing their logical thinking.

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