

Exploring the Construction of Efficient Primary School Mathematics Classrooms under the Background of "Double Reduction"

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Abstract: With the implementation of the "double reduction", primary school mathematics classroom teaching focuses on enhancing students' subject core literacy. To achieve the goal of reducing burden without compromising the quality of education, the key is to enhance students' self-learning ability and optimize classroom teaching strategies accordingly. Build an efficient teaching classroom through this approach. In order to better meet the needs of quality education, primary school mathematics teachers must seriously consider how to transform and innovate their teaching models, provide more opportunities for students to participate in experiential and exploratory learning activities, and pay attention to students' personalized growth needs, thereby promoting students' comprehensive and all-round development and achieving the construction of high-quality and efficient primary school mathematics classrooms. This article aims to analyze and construct a framework for efficient classrooms, focusing on the three key links of "pre class preparation, classroom implementation, and post class feedback". Using system design thinking, the influencing factors of constructing efficient classrooms are analyzed, aiming to provide practical guidance for teachers and students.

Keywords: "Double Reduction"; Primary School Mathematics; Efficient Classroom; Teaching Strategy

1. Introduction

In the context of the implementation of the "double reduction" policy, improving classroom quality and enhancing teaching efficiency are the focus of attention for teachers in various subjects. For primary

school mathematics education, teachers not only need to pay attention to the comprehensive development of students, including health, comprehensiveness, harmony, sustainability, etc., but also should consider the characteristics of mathematics and comprehensively improve the mathematical literacy of primary school students. In the implementation process of mathematics education in primary school, teachers should guide primary school students to rely on their personal life experience, abstract mathematical models from practical problems, and deeply explain and practice these knowledge based on their psychological growth characteristics and learning development process. This move aims to enhance students' logical thinking ability, emotional orientation, numerical sensitivity, and value cultivation. To achieve this goal, teachers should optimize and adjust existing teaching strategies, carefully design three stages before, during, and after class, and explore flexible and diverse teaching modes. Teachers not only pursue the depth and breadth of teaching in imparting knowledge, creating efficient classrooms, but also pay attention to the details of every aspect of teaching to ensure teaching quality. Primary school mathematics education should take students' comprehensive development as the starting point and foothold, and promote the comprehensive improvement of knowledge, abilities, and qualities through scientific teaching design.

2. Pre class: Carefully Design and Prepare for Classroom Implementation

2.1 System Design and Teacher Professional Competence are Prerequisites for Building an Efficient Classroom

In the pre class preparation stage of primary school mathematics, teachers play a crucial

role. They need to carefully plan and design the teaching content of each class to ensure that students can learn mathematics knowledge efficiently and joyfully. To improve the efficiency and effectiveness of classroom teaching, knowledge should not be forced into students' minds. Instead, correct teaching strategies should be emphasized, respecting students' subject status in the classroom, understanding their needs, teaching according to their aptitude, and making students more willing to participate in classroom learning [1]. This process is not just about simply listing knowledge points, but requires in-depth and detailed consideration of multiple aspects to construct a teaching plan that is both in line with curriculum standards and close to students' actual situations. Teachers need to design clear teaching processes to ensure the coherence and effectiveness of the teaching process. At the same time, it is necessary to allocate reasonable time for each teaching session to ensure a tight and orderly teaching schedule, while leaving enough time for classroom interaction and practice. Teachers need to integrate teaching objectives, teaching content, teaching methods, teaching activities, exercise design, and other elements to form a complete teaching plan. In terms of optimizing teaching content and methods, teachers need to integrate relevant knowledge points to ensure the systematicity and coherence of teaching content. At the same time, teachers should actively innovate teaching methods, such as using situational teaching, game teaching, inquiry based teaching, and other methods, to stimulate students' interest and initiative in learning. Through diverse teaching activities such as group discussions, role-playing, and math games, students can learn and master knowledge through participation. In addition, teachers are considering using information technology tools such as multimedia and online resources to enrich teaching content and forms. The professional competence of teachers is an important factor in building an efficient classroom.

2.2 Collaborative Research and Co Creation, Collective Lesson Preparation by Teaching and Research Groups Is the Key to Building an Efficient Classroom

The goal of mathematics education has never been to achieve the goal of all students

walking in unison, but to help students at different levels achieve suitable development. Teachers need to combine students' life experience and cognitive level to carry out teaching innovation design from the aspects of reasonable stratification, innovative efficiency enhancement, curriculum integration, and integration into life, in order to achieve the goal of reducing the burden of primary school mathematics and better promote the development of students' mathematical core literacy [2]. The flame is high when everyone gathers firewood. The mathematics teaching and research group regularly holds teaching and research activities, benchmarking against the "Compulsory Education Mathematics Curriculum Standards". Starting from the task of quality education in the new era and the objective needs of students, they deeply discuss and exchange ideas on "how to promote the improvement of classroom efficiency", "reduce student pressure", "optimize homework assignments", "stimulate student interest", "improve student abilities" and other aspects. Teachers in the teaching and research group classify and summarize specific situations encountered in the classroom and teaching over the years, and develop different solutions for common and individual problems encountered by everyone. They repeatedly practice in the classroom, form patterns, adopt collaborative innovation and deep mining strategies, and repeatedly analyze and plan for teaching objectives, course points, and students' learning trajectories in the classroom. Transforming mathematical knowledge and teaching content into practical teaching materials and implementation methods, providing a thinking framework and practical guidance for creating efficient teaching classrooms. Before class, the teaching and research group collectively discusses and carefully plans a study plan based on the different cognitive patterns of lower and higher grade students. After classroom practice, the specific data of formative and outcome evaluations are analyzed and reviewed to improve the teaching content and strategies suitable for different grades under the background of double reduction. To forge iron, one must also be strong in oneself. To build an efficient primary school mathematics classroom, primary school mathematics teachers should learn and establish new

teaching concepts in line with the development of the times, enhance their comprehensive abilities, deeply understand the teaching strategies required for the implementation of the new curriculum and new standards under the background of double reduction, and lay a solid foundation for effective teaching implementation.

2.3 Careful Questioning and Careful Pre-Class Preparation by Teachers are Important Steps in Building an Efficient Classroom

How to achieve the best effect of pre class preview? The primary school mathematics teaching and research team needs to carefully explore how to balance the relationship between "guidance, assistance, and independent exploration" in mathematics classroom teaching under the framework of "double reduction" implementation. Preview is an effective strategy to stimulate children's enthusiasm and initiative in learning, and it is also a prelude to improving efficient classroom learning. The teacher carefully designs pre class assignments based on teaching objectives and course knowledge points. By observing the bits and pieces of life, the design combines knowledge points with representative cases in daily life, subtly guiding children to observe and think about life phenomena while completing pre class preparation, achieving a subtle and silent effect. Before class, the teacher carefully plans a preview plan to ensure that students go to class with questions. Children observe, think, and doubt about the life problems they encounter, which not only promotes the development of students' potential, but also cultivates their confidence. Compared to the teaching method directly taught by teachers, students usually acquire more solid and impressive knowledge through active learning. Moreover, a proactive learning approach can effectively stimulate primary school students' potential for exploring knowledge and deep thinking in classroom activities. In the process of reducing burden and increasing efficiency, primary school mathematics teachers should aim to construct an efficient mathematics classroom as their goal and guidance, allowing students to connect their own real-life experiences, accumulate and understand knowledge based on real life, enhance their practical cognitive

level, and strengthen their sense of social integration [3].

3. In Class: Tailored and Effectively Guided

3.1 Understand Students and Teach Them According to Their Aptitude

Teaching according to students' aptitude is an educational and teaching model under the "process view". It is an education implemented by teachers based on the individual characteristics and cognitive differences of different students, proposing appropriate development goals, and adopting different teaching methods and strategies during the teaching process [4]. In the early stage of teaching, teachers need to have a full understanding of students' learning styles and class situations, and develop scientific teaching strategies based on the characteristics of primary school students and primary school mathematics subjects. Considering factors such as environment and family education, there are significant differences in knowledge reserves and learning styles among primary school students. Teachers use various methods such as quizzes, inquiries, quizzes, and interactive feedback to understand students' learning status, and flexibly adjust teaching plans based on these characteristics, implementing necessary supplements and optimization measures to promote the practice of personalized teaching and effectively improve students' learning outcomes.

In the implementation of classroom teaching, teachers should actively discover and adopt teaching methods that can fit the characteristics of children. To help students clear their doubts, teachers should encourage them to ask questions and try their best to provide answers. At the same time, teachers should closely monitor students' learning feedback to ensure that they can quickly identify and adjust teaching strategies in a timely manner. Faced with personalized differences among students, teachers should flexibly adjust teaching strategies and content arrangements based on students' interests and cognitive levels. For students who have already mastered the current knowledge points, teachers can recommend corresponding deepening learning resources and expansion materials. Ensure that every child can understand and master the knowledge they

have learned.

3.2 Creating an Exciting Environment and Enlivening the Classroom

Interest is the best teacher for students to learn, and it is also the driving force for active learning, which can attract them to fully engage in exploratory learning. Elementary school students are full of curiosity, and the dull math classroom requires elementary school math teachers to use various methods to stimulate their interest. For example, by creating interesting scenarios such as "driving a train" and "dragon race", students can be guided to actively participate, express themselves, think critically, and extract mathematical concepts from intuitive feelings. When teaching knowledge related to geometric shapes, teachers should avoid rote learning methods and instead set questions, introduce practical application cases from daily life, guide students to think and try to answer them. Students can stimulate their interest in learning through group discussions, collaborative learning, and other methods. Teachers can use new media teaching methods such as dynamic graphics, videos, etc. to guide and guide students, help them eliminate the boredom of learning mathematics, and organize problem-solving ideas.

Teachers create vivid situations, stimulate thinking and questioning, and integrate real-life examples to enable students to spontaneously explore knowledge in a relaxed and enjoyable learning environment. By solving mathematical problems in daily life, students not only contribute to the development of abstract thinking, but also experience the joy of learning mathematics. This method of setting an exciting environment can not only continuously stimulate students' desire to explore new knowledge, but also provide new implementation paths for improving classroom quality and efficiency under the background of double reduction.

3.3 Guiding Learning and Guiding Thinking, Constructing Integrated Thinking

In primary school mathematics teaching, teachers need to truly understand and achieve the goal of "reducing burden and increasing efficiency" in the primary school mathematics

classroom. By designing an efficient, vivid, and effective teaching environment, using the teaching concepts of "guiding learning and thinking" and "constructing integrated thinking", teachers can meet the diverse needs of students, inspire their thinking through problem design, introduce real-life examples to help them understand abstract concepts, encourage students to think from multiple perspectives, provide multiple solutions, promote cooperative learning, and promote students' thinking collision through interaction. For example, when teaching students about the concept of fractions, teachers can introduce daily life scenarios such as cutting fruits, dividing snacks, etc., and help students understand the meaning of fractions through practical operations. At the same time, teachers should encourage students to think about problems from different perspectives, provide multiple solutions, and through group discussions and other forms of interaction, allow students to collide ideas and explore solutions to problems together. In addition, teachers should pay attention to the cultivation of students' emotional attitudes and values, guide them to form a positive learning attitude, and cultivate their interest and love for mathematics. Incorporating the historical stories of mathematics and the life experiences of mathematicians into the implementation of primary school mathematics education can greatly stimulate students' interest and desire to explore mathematical culture. This teaching method not only helps to create an efficient and lively atmosphere for mathematics learning, but also expands the knowledge scope of mathematics learning. We have created an efficient, lively, and effective learning environment for mathematics.

3.4 Pay Attention to Feedback and Encourage in a Timely Manner

In primary school mathematics classroom teaching, it is crucial for teachers to provide immediate, specific, and constructive feedback to students after completing mathematical problems or tasks. Integrating feedback and encouragement into daily teaching can help students feel progress and achievement at every step of mathematics learning. In classroom teaching, teachers need to observe students' performance more carefully, understand their learning styles, knowledge

acceptance abilities, and learning interests. Teachers should provide precise support and motivation to students' learning needs, guide and subtly enhance their learning confidence and enthusiasm. For example, primary school mathematics homework plays a dual role between teachers and students: it is not only an important channel for teachers to observe students' learning progress, but also an effective platform for students to strengthen their knowledge mastery and improve their problem-solving skills. Timely feedback on learning outcomes plays an important role in teaching during this process. It can test the effectiveness of teaching and learning, and enable teachers to quickly grasp students' learning status, thereby flexibly adjusting teaching methods and effectively promoting students' academic progress. When correcting homework, teachers should promptly obtain feedback from students, analyze the root causes of problems, and develop corresponding teaching plans. Teachers can understand students' learning status based on their feedback and provide effective guidance on problems, promoting students to better grasp knowledge. Teachers also observe students' performance and emotional feedback in the classroom, timely understand students' psychological dynamics and learning status, help teachers adjust teaching strategies, and assist students in solving teaching difficulties and doubts, thereby better meeting students' learning needs and encouraging students to enhance their learning confidence. Integrating feedback and encouragement into daily teaching, making it a norm, can provide support and motivation for every student, helping them feel progress and achievement at every step of their mathematics learning, and thus become more passionate and engaged in mathematics learning. Teachers and students also need to receive feedback information during the evaluation process to provide direction for the next step of teaching and learning, in order to continuously cultivate and strengthen the mathematical core literacy of primary school students, and promote their further comprehensive and sustainable development [5].

4. After Class: Systematic Reflection, Promoting Homework Reform

4.1 Establish a System Concept and Design Assignments at Different Levels

Innovating primary school mathematics classroom teaching activities under the background of "double reduction", actively exploring the scientific design and application of teaching systems, can improve traditional teaching models, stimulate students' interest in learning, and thus mobilize students' enthusiasm for deep learning, effectively improving primary school students' understanding and recognition of mathematical knowledge [6]. In primary school mathematics teaching, teachers need to establish the concept of new era homework design, start from a systematic thinking perspective, deeply understand the textbook, and sort out the main content and internal connections between each unit. Teachers in the teaching and research group should focus on the overall subject of primary school mathematics, design homework based on learning objectives and key and difficult points, and thus form a complete homework system. Strengthen the flexibility and vividness of homework forms, and stimulate students' learning enthusiasm and creativity. When planning homework content, teachers should comprehensively consider the differences among students, design different levels of homework according to students of different levels, and reflect the coherence and hierarchy of the knowledge system. The design of homework aims at a dual goal: on the one hand, to deepen students' grasp of the learned content, and on the other hand, to promote the improvement of students' comprehensive mathematical literacy. Teachers should systematically and dynamically optimize and improve homework design, screen and combine according to the real situation of students in the class, and repeatedly optimize based on student homework feedback. Homework design should follow the laws of students' physical and mental development, grasp students' learning characteristics and cognitive laws, effectively reduce students' burden through scientific and reasonable homework design, and cultivate students' core literacy [7]. Starting from the learning situation, establish a systematic concept, design homework at different levels, motivate students to actively participate in learning, complete homework with high quality, and comprehensively achieve the goal of reducing

workload and increasing efficiency.

4.2 Innovative Ideas for Designing High-Quality Assignments

In primary school mathematics education, homework is not only a reinforcement and expansion of classroom teaching content, but also a key way for teachers to test students' learning effectiveness. According to the practice law of learning, necessary exercises or daily assignments are the scientific guarantee for effective learning, but this assertion needs to be based on the effectiveness of the assignment design itself [8]. Primary school mathematics teachers' thinking and effective homework design is one of the important ways to achieve "reducing burden and increasing efficiency". Under the implementation of the "double reduction" policy, primary school mathematics teachers need to customize exploratory and innovative homework based on the actual situation of students. These assignments not only assess students' mastery of basic knowledge, but also reveal their improvement in cognitive, thinking, and exploratory abilities. In order to achieve reasonable control of homework quantity and improve homework quality, teachers need to actively explore and design high-quality homework. For example, if a teacher wants to design an assignment for teaching the area of geometric shapes in elementary school mathematics, they should consider the comprehensive application practice of students' calculation strategies for different shapes in the assignment design, such as designing carpets for home decoration, campus flower bed layout, etc. The knowledge points of geometric shape area should be applied to solve practical problems in daily life, in order to enhance students' practical ability and innovative thinking. In addition, teachers should also consider the fun and practicality of homework design to stimulate students' mathematical thinking. For example, teachers can design in-class assignments based on the school schedule to help students master clock knowledge. After class, students are required to design their own time management schedule for the day and apply their mathematical knowledge to solve real-life problems. This teaching method not only helps students master the basic knowledge of clocks and watches, but also cultivates their time management skills, which

helps to develop good sleep habits. Therefore, teachers need to actively seek innovation and constantly try new forms and contents of homework to satisfy students' curiosity and thirst for knowledge. High quality homework skills meet students' learning needs and better enhance teaching quality and effectiveness.

4.3 Co Creation and Research, Optimizing Homework Quality

In the context of "double reduction", primary school mathematics teachers should combine diverse design methods to optimize and innovate homework in the process of teaching design, so that students can develop a positive attitude in the process of completing rich and interesting homework, no longer considering homework as a burden, and promoting students' comprehensive development[9]. To construct a scientific view of homework, we should take "people" as the starting point and adhere to the basic orientation of comprehensive education and personalized education. In order to optimize homework design, schools should build a homework design platform, organize teaching and research activities, and enable teachers of the same grade to reach consensus on homework design in a unit, and jointly plan feasible math homework for one week. This approach not only improves the efficiency and scientificity of homework design, but also promotes communication and cooperation among teachers. In addition, schools should provide more learning and communication platforms, and organize diverse activities to develop and scientifically design a high-quality and unique school-based mathematics homework library that conforms to the development laws of students, achieving grade uniformity, standardization, and balance. In order to better improve and optimize the quality of homework, schools should strengthen the supervision of school-based homework and establish a dynamic monitoring mechanism. In order to better understand the completion of teaching tasks by students, review the effectiveness of teachers' design of mathematics homework, and promptly rectify problems in homework design, schools should conduct regular sampling activities. In the context of "double reduction", it is particularly important to innovate homework types, enrich homework content, and play the role of homework in

promoting the development of students' mathematical core literacy [10].

5. Conclusion

In the context of the "double reduction" policy, in order to achieve high-quality teaching results in primary school mathematics, it is necessary to transform and innovate the teaching mode. The cornerstone of building an efficient primary school mathematics classroom lies in creating a high-quality classroom environment, and its core driving force comes from teachers. As the core element driving change, schools should promote the reform of primary school mathematics teaching environment and comprehensively promote the growth and development of students. The importance of harmonious relationships between families and schools cannot be ignored. Schools should actively establish such relationships and work together with all professional teachers to lay a solid foundation for children's future learning and life. Teachers should make full use of the classroom as a platform to communicate and collaborate with students and parents through various means, working together to improve students' learning outcomes and overall quality. The construction of an efficient primary school mathematics classroom requires joint efforts from multiple parties to lay a solid foundation for students' future development.

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