Occupation and Professional Education Vol. 2 No. 1, 2025

Exploring the Path to Improving the Quality of Primary School Mathematics Teaching under the Background of "Double Reduction"

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Abstract: The quality of primary school mathematics classroom teaching is influenced by various factors, such as the teaching level of teachers, students' learning attitudes, and teaching environment, which to varying degrees affect the quality of classroom teaching. Teachers can stimulate students' interest in learning by optimizing teaching strategies from the perspective of learners. This article explores in depth the path to improving the quality of primary school mathematics classroom teaching under the background of "double reduction". The core purpose is to ensure that students can firmly grasp basic mathematical knowledge while reasonably reducing their academic burden, and further cultivate their mathematical logical thinking and problem-solving abilities. This article adopts a systematic analysis method to sort out and analyze the current situation of primary school mathematics classroom teaching, revealing the problems and challenges in primary school mathematics classroom teaching. On this basis, a feasible improvement strategy is constructed, aiming to provide theoretical support and practical guidance for the innovation and progress of primary school mathematics education.

Keywords: "Double Reduction"; Primary School Mathematics; Classroom Teaching; Teaching Strategies; Teaching Quality

1. Introduction

1.1 Research Background and Significance

In the current educational context, the implementation of "double reduction" has posed new challenges and requirements for primary school mathematics classroom teaching. Its core content is to reduce students' extracurricular and homework burdens, while improving the quality and effectiveness of school education. It requires classroom teaching not only to cover basic textbook content, but also to cultivate students' good study habits and comprehensive qualities through appropriate teaching methods [1]. For primary school mathematics, how to implement the "double reduction" requirement while ensuring teaching quality has become a hot topic of concern in the current education field.

Primary school mathematics, as a fundamental subject, is of great significance in cultivating students' logical thinking and problem-solving abilities. Traditional mathematics classroom teaching often focuses on imparting knowledge and training test taking skills, neglecting the cultivation of students' subjectivity and learning interest. This not only increases students' academic pressure, but also limits the development of their innovation ability and comprehensive quality. The education of primary school mathematics should gradually move from boredom to fun, from books to life, from knowledge learning to the construction of core competencies, from single subject education to integrated education. Classroom teaching should be based on human development and connected with social development. Teachers need to transform traditional educational concepts and adopt a fresh perspective to respond to the development trend of primary school mathematics education, in order to innovate teaching strategies in mathematics classrooms, ensure the effectiveness of "double reduction", and better serve students' lifelong development [2]. Therefore, studying the improvement path of primary school mathematics classroom teaching quality under the "double reduction"

policy is of great significance for promoting students' comprehensive development and improving the quality of education.

1.2 Overview of Current Research Status at Home and Abroad

There have been abundant research results on the improvement path of classroom teaching quality in the field of education both domestically and internationally. Foreign scholars often explore how to improve students' learning effectiveness and interest from the perspectives of teaching theory, teaching methods, and learning evaluation. However, domestic scholars are more concerned with how to implement these theories and methods in specific teaching practices to adapt to China's educational environment and student characteristics.

Under the background of "double reduction", the research on the improvement path of primary school mathematics classroom teaching quality has gradually attracted the attention of many scholars. Some scholars have attempted to explore how to improve teaching effectiveness while reducing student burden by optimizing teaching design, improving teaching methods, and enhancing teacher-student interaction. At the same time, some scholars are also concerned about how to use modern educational technology, such as multimedia teaching, online learning platforms, etc., to improve the teaching quality of primary school mathematics classrooms.

The current research still has certain limitations. On the one hand, the exploration of the path to improving the quality of primary school mathematics classroom teaching under the "double reduction" policy is not deep and systematic enough; On the other hand, there is a lack of empirical research targeting different regions, schools, and student groups, making it difficult to provide specific and actionable teaching improvement suggestions.

2. Challenges and Opportunities of Primary School Mathematics Classroom Teaching under the Background of "Double Reduction"

2.1 The Connotation and Objectives of "Double Reduction"

The "double reduction" policy, which reduces the homework and extracurricular training burden of students in compulsory education, is an important part of China's education reform in recent years. Its connotation is mainly reflected in two aspects: first, reducing students' homework burden, and second, reducing the burden of extracurricular training. The reduction of these two aspects of burden aims to create a more relaxed and free learning environment for students, enabling them to develop comprehensively and grow healthily.

The goal of "double reduction" is to promote educational equity, improve the quality of education, and promote the comprehensive development of students. By reducing students' homework burden, they can have more time for self-directed learning, interest cultivation, and physical exercise after class, thereby improving their overall quality. Meanwhile, reducing the burden of off campus training can avoid premature "exam oriented" tendencies, allowing students to learn and grow in a more natural and relaxed environment.

For primary school mathematics education, the implementation of "double reduction" means that more attention needs to be paid to the quality and efficiency of classroom teaching, so that students can fully understand and master mathematical knowledge in the classroom. At the same time, it is also necessary to pay attention to students' individual differences and interest characteristics, and stimulate their learning interest and enthusiasm through diverse teaching methods and means.

2.2 The Guiding Role of "Double Reduction" in Primary School Mathematics Education

The 'double reduction' policy plays an important guiding role in primary school mathematics education. Firstly, it emphasizes that primary school mathematics education should focus on cultivating students' mathematical literacy and thinking abilities, rather than just pursuing scores and grades. In primary school mathematics teaching practice, teachers follow the guidance of "double reduction", appropriately reform and innovate traditional teaching models, create efficient mathematics classroom teaching models, stimulate students' interest in self-directed learning, improve classroom learning effectiveness, and thereby reduce students' psychological pressure [3]. This requires

teachers to pay more attention to the cultivation of students' mathematical thinking and problem-solving abilities in the teaching process. By guiding students to engage in mathematical exploration and practical activities, they can improve their mathematical application ability and innovative consciousness.

Secondly, "double reduction" advocates personalized education, paying attention to individual differences and interests of students. In primary school mathematics education, this means that teachers need to teach students according to their aptitude, develop personalized teaching plans and programs based on their different needs and interests, in order to meet the learning needs and development potential of different students.

In addition, the "double reduction" policy emphasizes that primary school mathematics education should focus on the comprehensive development of students. In addition to learning mathematical knowledge, teachers also need to pay attention to the cultivation of students' emotions, attitudes, and values. By creating a positive and harmonious learning atmosphere and teacher-student relationship, teachers can promote students' physical and mental health development.

2.3 Challenges and Opportunities in Primary School Mathematics Classrooms under the Background of "Double Reduction"

In the context of "double reduction", the challenges faced by primary school mathematics classrooms mainly come from how to efficiently complete teaching tasks within limited teaching time, while ensuring the quality of students' learning. This requires teachers to possess higher professional competence and teaching ability, be able to flexibly apply various teaching methods and means, and improve classroom teaching efficiency and quality. In practice, in order to implement teaching optimization and promote students' comprehensive development, teachers need to conduct systematic research on teaching, analyze its structural composition, and then make detailed adjustments around students' development needs to generate targeted teaching processes [4]. Teachers can take this opportunity to try new teaching methods and concepts, enhance the attractiveness and fun of the classroom, and thus stimulate students' interest and enthusiasm for learning.

2.3.1 Teaching methods need to be adjusted:

Under the background of double reduction, in classroom teaching, teachers avoid being confined to a certain teaching mode, but instead focus on reforming and innovating teaching modes around students as the main body, flexibly using diversified teaching modes to carry out classroom teaching, thereby effectively improving teaching efficiency [5]. The teaching goal of primary school mathematics is no longer just about imparting knowledge, but also about cultivating students' mathematical thinking and problem-solving abilities. Therefore, the traditional way of imparting knowledge needs to be adjusted. Teachers establish core knowledge points in teaching based on the teaching content and form, and design teaching methods such as group cooperative learning, independent exploration, and game based learning to enable students to master core concepts and skills within limited learning time. For elementary school students, a good classroom atmosphere can often achieve twice the result with half the effort in their mathematics learning. The reason is that elementary school students are generally active and have a strong desire to explore new things. If the classroom atmosphere is quite dull, it will affect students' enthusiasm for mathematics learning in the classroom [6].

2.3.2 Classroom activities need to be innovative:

Guided by the concept of "double reduction", primary school mathematics classroom activities are undergoing a profound innovative transformation. Teachers explore diversified strategies to integrate into the classroom, aiming to stimulate students' interest in learning, cultivate their mathematical thinking and practical abilities. The challenge faced by teachers is how to design interesting and practical classroom activities, guiding students to actively explore mathematical knowledge and deepen their understanding of mathematical concepts through providing rich mathematical cases and interdisciplinary knowledge integration. Through innovative classroom activities, ensure that every student can make progress at a pace that suits them.

2.3.3 The evaluation method needs to be

changed

The traditional way of evaluating exams may increase students' psychological burden. The new evaluation method should pay more attention to students' process performance and comprehensive abilities, and tend to focus on formative evaluation and comprehensive quality assessment. Under the promotion of "double reduction", the evaluation method of primary school mathematics also needs to be reformed. The evaluation method pays more attention to the process, focusing on students' classroom participation, homework completion, and learning methods, in order to more accurately assess students' learning status. In addition, the evaluation also fully considers the individual differences of students, providing targeted guidance and support, so that each student can grow at their own pace. And the feedback of evaluation results has become more timely, specific, and constructive, aiming to help students clarify their learning direction and promote their comprehensive development. This change not only reduces students' learning pressure, but also injects new vitality and motivation into their journey of mathematics learning. In the process of independent learning and exploration activities in mathematics, teachers need to objectively evaluate students' performance, point out their problems in the learning process, guide students to complete independent learning with the correct methods, and guide students in the correct direction of exploration [7].

2.3.4 Teachers' professional competence needs to be improved

In primary school mathematics teaching, teachers must understand the practical significance and connotation of "double reduction", explore new teaching models and methods, and construct effective teaching strategies for primary school mathematics under "double reduction". Faced with new challenges, teachers' professional competence and teaching ability urgently need to be improved. This also requires teachers to based on students' cognitive level and learning characteristics, carefully prepare lessons based on the exploration of knowledge content, construct a relatively complete knowledge system, meet students' different learning needs, anticipate the problems they may encounter in the process of mathematics learning, and effectively improve the efficiency of mathematics teaching [8]. On the basis of understanding the needs of teachers, schools regularly organize training to help teachers master the new curriculum standards and teaching methods, effectively promoting the reform and innovation of primary school mathematics education, and providing teachers with more exploration space and possibilities.

3. Analysis of the Current Situation of Primary School Mathematics Classroom Teaching

3.1 Current Teaching Mode and Characteristics of Primary School Mathematics Classroom

The teaching mode of primary school mathematics classroom is gradually shifting from the traditional "teacher centered" to "student centered". This transformation reflects the update of educational philosophy, aimed at cultivating students' self-learning ability, innovation ability, and cooperation ability. Specifically, the current teaching mode of primary school mathematics classrooms presents the following characteristics:

Enhanced interactivity. Teachers are no longer simply knowledge transmitters, but become guides and facilitators in the learning process of students. Students actively participate in the classroom through group discussions, collaborative exploration, and other means, interacting and communicating with teachers and other classmates.

Practical improvement. Mathematics, as a highly practical subject, requires students to understand and master knowledge through practical operations. Therefore, current primary school mathematics classrooms focus on combining theoretical knowledge with practical problems, designing rich practical activities to allow students to experience the charm of mathematics through hands-on operations.

Personalized teaching is highlighted. Teachers adopt differentiated teaching strategies based on the characteristics and needs of different students, providing tailored learning plans for each student. This helps to stimulate students' interest and motivation in learning, and improve teaching effectiveness.

3.2 Problems and Deficiencies in Primary School Mathematics Classroom Teaching

Although the teaching mode of primary school mathematics classroom is constantly innovating and developing, there are still some problems and shortcomings. These issues are mainly manifested in the following aspects:

3.2.1 Single teaching method

Some teachers have outdated teaching concepts and still use traditional "cramming" teaching methods, ignoring the students' subjectivity and initiative. This teaching method can easily lead to students losing interest in learning and even developing a sense of disinterest in learning. There are also many teachers who rely on textbooks and still rely on traditional lecture style teaching. Knowledge points lack organization and expansion, and content transmission lacks interactivity and interest, resulting in students passively receiving knowledge and difficult to stimulate their learning enthusiasm and initiative. There is a lack of diversified teaching methods in teaching, such as information technology, game learning, etc., and modern technological means have not been fully utilized to improve teaching effectiveness.

3.2.2 Unequal distribution of teaching resources

In the field of primary school mathematics education, the problem of uneven distribution of teaching resources has always been a major bottleneck restricting the improvement of education quality. In recent years, the government and various sectors of society should increase investment in education in economically underdeveloped areas and improve teaching facilities in schools. However, there are still some areas where the latest teaching concepts and methods are not trained in a timely manner, and teachers find it difficult to use diverse teaching methods to stimulate students' interest in learning, resulting in monotonous and dull classrooms. Due to information barriers, some teachers in remote areas often have difficulty accessing and obtaining diverse teaching resources. The lack of teaching materials also limits the diversity and depth of teaching activities, making it more difficult for students to understand and master knowledge. This uneven allocation of resources not only affects students' mathematical learning outcomes.

4. Exploring the Path to Improving the Quality of Primary School Mathematics Classroom Teaching

4.1 Establishing New Teaching Concepts and Strengthening Teachers' Professional Development

Teachers are the guides and designers of teaching activities, and their professional competence and teaching ability directly affect the quality of classroom teaching. Therefore, strengthening the professional development of teachers and continuously improving their mathematical teaching abilities is the primary task in enhancing the quality of classroom teaching. Schools should regularly organize teacher training, invite experts in the field of mathematics education to give lectures, share the latest teaching concepts and methods, and encourage teachers to actively explore new teaching models to improve their professional competence and teaching abilities. Through online platforms and other means, high-quality teaching resources and cases are transmitted to teachers in these areas, helping them improve their teaching level and broaden their teaching horizons. At the same time, teachers in these areas can be encouraged and supported to participate in training and exchange activities, learn advanced teaching concepts and methods.

4.2 Improve Teaching Facilities and Emphasize Student Participation

Schools should increase investment in teaching facilities, equipped with advanced multimedia equipment and online teaching platforms and other teaching resources, to provide strong support for the implementation of new technologies and concepts. During the teaching process, teachers should pay attention to students' participation and feedback. To understand students' learning needs and difficulties through questionnaire surveys, classroom observations, and other methods, in order to adjust teaching strategies and methods in a timely manner. Teachers utilize digital teaching resources, such as online games, virtual laboratories, etc., to integrate mathematical knowledge into games, allowing students to learn mathematical knowledge in games and improve learning interest and efficiency. During the implementation of classroom teaching, teachers present boring mathematical knowledge in various forms such as text, images, and sound, seize students'

interests in exploration, arrange learning tasks in a timely manner, and organize group discussions or competitions. In this way, abstract mathematical concepts will be more visualized and easy to understand, and students will master relevant knowledge through independent exploration and practice, and teaching will no longer be monotonous and boring [9]. Teachers can provide students with rich learning resources and opportunities through online platforms, courses, and other means. At the same time, they can also use technology such as data analysis and intelligent push to provide personalized learning advice and guidance for students. This can not only broaden students' learning channels, but also improve their learning efficiency and self-learning ability.

4.3 System Teaching Design, Creating Efficient Classrooms

Improving the quality of classroom teaching is a core issue in primary school mathematics education. Teachers can improve the quality of primary school mathematics classroom teaching by optimizing teaching content design, innovating teaching methods and means, strengthening teacher-student interaction and cooperation, and utilizing information technology to assist teaching. When optimizing the design of teaching content, teachers should reasonably design the coherence and hierarchy of teaching content and knowledge points based on the teaching syllabus and the actual situation of students. Teachers can also design challenging and inspiring questions based on students' age characteristics and learning habits, guiding students to actively think and explore, and improving teaching efficiency. Strengthening teacher-student interaction and cooperation is an important guarantee for building a good classroom atmosphere. Teachers should actively communicate and interact with students, pay attention to their needs and feedback, and adjust teaching strategies in a timely manner. At the same time, we should encourage cooperation and communication among students, and cultivate their teamwork spirit and communication skills through group discussions, collaborative task completion, and other methods. In the process of teacher-student interaction and cooperation, teachers can timely understand students' learning situation, discover their strengths and weaknesses, and provide targeted guidance for subsequent teaching.

5. Conclusion and Prospect

5.1 Research Conclusion

This study has drawn the following main conclusions through in-depth analysis of the quality of primary school mathematics classroom teaching:

The quality of primary school mathematics classroom teaching is influenced by various factors, including the teaching level of teachers, students' learning attitudes, the selection and arrangement of textbook content, and the creation of teaching environment. Among them, the teaching level of teachers and the learning attitude of students have a particularly significant impact on the quality of teaching.

The key to improving the quality of primary school mathematics classroom teaching lies in optimizing teaching strategies and stimulating students' interest in learning. Teachers should design inspiring and interesting teaching activities based on students' age characteristics and cognitive levels to attract their attention and increase their participation.

The selection and arrangement of textbook content should pay more attention to its connection with real life, and focus on cultivating students' mathematical thinking ability and problem-solving ability. At the same time, the creation of a teaching environment is also crucial. A warm, harmonious, and positive classroom atmosphere helps students to better engage in learning.

5.2 Suggestions for Improving the Quality of Primary School Mathematics Classroom Teaching in the Future

Under the background of double reduction, in classroom teaching, teachers avoid being confined to a certain teaching mode, but instead focus on reforming and innovating teaching modes around students as the main body, flexibly using diversified teaching modes to carry out classroom teaching, thereby effectively improving teaching efficiency [5]. In the future, the following suggestions are proposed to improve the quality of primary school mathematics classroom teaching:

Pay attention to individual differences among

students and implement personalized teaching. Teachers should fully understand the characteristics and needs of each student, develop personalized teaching plans, and enable each student to improve on their existing foundation.

Optimize textbook content and enhance its connection with real life. Textbook writers should pay attention to the integration of mathematical knowledge with real life, so that students can feel the practical application of mathematics in life while learning mathematical knowledge.

Create a good classroom atmosphere and stimulate students' interest in learning. Teachers should pay attention to classroom interaction and guiding students' emotions, allowing students to learn mathematics in a relaxed and enjoyable atmosphere, thereby enhancing students' interest and enthusiasm for learning.

5.3 Outlook

In short, in the future, with the continuous development of information technology, primary school mathematics teaching will pay more attention to the integration with modern technology, providing more possibilities for improving teaching quality. The precise and efficient teaching empowered by technology has become a trend in education, providing students with high-quality educational services and promoting their comprehensive development through content optimization, process refinement, personalized teaching and interaction. The application of technological means and data analysis is driving the transformation of the education field towards precise and efficient teaching. To achieve precise and efficient teaching, teachers need to constantly explore and innovate, improve their information technology literacy, pay attention to students' needs, optimize teaching strategies, and ensure that technology serves the improvement of teaching quality. Education will increasingly focus on promoting personalized development of students, realizing the educational ideal of "teaching students according to their aptitude and developing individuality" that we have emphasized for thousands of years [10].

Acknowledgements

This article is the research result of the key project of the "14th Five Year Plan" for educational science planning in Gansu Province in 2023, "Practical Research on Improving the Quality and Efficiency of Primary School Mathematics Classroom Teaching under the Background of "Double Reduction"". Project approval number: GS [2023] GHBZ215.

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