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Research on the Problems and Improvement of Junior Middle School Mathematics Examination Review Teaching under the Background of "Double New"

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Abstract: With the deepening and reform of our education enterprise, the traditional teaching way can hardly satisfy the new demand for students' development. Therefore, educators must actively renew the educational concept, optimize the teaching strategy, push the students to the deeper study. In view of this, this article briefly summarizes the significance of the total review of junior middle school mathematics, analyzes the difficulties faced in teaching and discusses the teaching strategies such as clear teaching objectives, consolidating the foundation of students and adopting diversified teaching methods, so as to hope that these strategies can provide useful reference for educators.

Keywords: Junior high school mathematics; Review for senior high school entrance examination; Teaching strategy

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1. Introduction

For junior high school students, the entrance examination is not only a comprehensive test of their mathematics learning in the past three years, but also an important node that affects the future direction of students. Before the senior high school entrance examination, a comprehensive and in-depth review of mathematics can make students have a clear and systematic understanding of the mathematical knowledge they have learned in the past three years, help students consolidate the knowledge they have mastered and make up for the existing shortcomings. Therefore, it is of great significance to discuss the optimization strategy of junior middle school math exam review teaching.

2. The significance of the total review of junior middle school mathematics

2.1. Help students to consolidate the foundation

The link of junior middle school math review, due to the complex knowledge content, teachers need to do a

good job of preparation and lead students to comprehensively review and consolidate the content of the past three years. In the review process, it is helpful for students to summarize and summarize the knowledge they have learned, internalize and absorb the basic knowledge and form their knowledge system. In addition, the review is also a process of checking omissions and making up for deficiencies. Students review the knowledge systematically so as to find the deficiencies and make them up in time.

2.2. Strengthen mathematical logical thinking

The review of the mathematics examination in junior middle school is not only a review and summary of the knowledge learned in the past, but also a key period to strengthen the ability of mathematical logical thinking. At this stage, students can consolidate their basic knowledge of mathematics through systematic review, deepen their understanding of mathematical concepts and principles, and improve their ability to analyze and solve problems. The cultivation of this ability plays a vital role in cultivating students' mathematical logical thinking. Mathematical logical thinking is the core of mathematics learning, which involves abstract thinking, induction classification, deductive reasoning and many other aspects [1]. Through the review of the senior high school entrance examination, students can constantly use these ways of thinking to solve problems, so as to gradually improve their level of mathematical logical thinking.

2.3. Help students build a systematic knowledge system

The total review of the contents learned in the three years of junior middle school mathematics helps students to integrate the scattered mathematical knowledge into a complete and systematic system. This systematic knowledge system not only makes it easier for students to understand and remember important knowledge points but also enables students to use the knowledge more flexibly to solve practical problems. The process of total review is also a process of in-depth knowledge understanding and digestion, in which students can find the links and rules between knowledge, and then improve the ability of mathematical thinking and problem-solving. Therefore, the total review of junior high school mathematics is not only a review of the learned knowledge but also a comprehensive improvement of students' mathematical literacy.

3. The teaching problems of the general review stage for junior high school mathematics

3.1. The positioning of the examination review is not accurate enough

The scope of the examination is wide, covering a wide range of knowledge points. If the review positioning is not accurate enough, students cannot accurately grasp the focus of the review and may put too much time and energy into unnecessary knowledge points, resulting in the overall review direction deviation [2]. To ensure the efficiency of the review, the teacher must be clear about the focus of the review and ensure that the positioning is clear and accurate. In this way, the teacher can work out a scientific review plan based on these key points, guide the students to avoid unnecessary waste of time and energy, and ensure that the math review in the middle school exam gets the ideal effect.

3.2. Students lack the subject status

In the review stage of junior middle school mathematics, the problem of ignoring students as the main body does exist. At this stage, teachers often pay too much attention to the indoctrination of knowledge and the training of

question types, but ignore the subject status of students in learning [3]. Under this kind of teaching method, students often lack the opportunity to think and explore actively, and they are required to review according to the pace and way of teachers, but cannot carry out targeted learning according to their learning situation and interest points. This kind of teaching method, which ignores students' subjectivity, not only limits students' thinking development and innovation ability but also easily leads to students' boredom and resistance to math review.

3.3. Paying too much attention to the tactics of examination

The so-called "sea of examination tactics" refers to asking students to improve their test-taking ability and scores by conducting a lot of exercises [4]. However, the problem with this teaching method is that it often leads students to repeat the questions mechanically, lacking a real process of thinking and exploring. Students may improve their scores in a short time, but they do not grasp the nature of mathematical knowledge and problem-solving skills. In the long run, students will become dependent on the template of the answer to the question and will not be able to respond flexibly to new problems and challenges [5]. In addition, the question-testing tactics also put students under great pressure to study. Facing countless questions, students may feel anxious and frustrated, and even develop an aversion to math.

3.4. Ignoring the cultivation of students' mathematical thinking

There is a misunderstanding in the mathematics examination review course among many students. They think as long as they can master math problem-solving skills, and grasp common question types through a lot of practice, then math results will naturally have a significant improvement [6]. Therefore, in the review of mathematics knowledge points, many students only stay at the level of solving problems without in-depth exploration of related knowledge points. So, they lack of ability to deeply understand and applicate mathematical knowledge. In the long run, this way of learning will hinder the cultivation and promotion of students' comprehensive quality of mathematics. In addition, due to the lack of necessary communication activities and joint exploration of review content between students and teachers, students cannot effectively practice divergent mathematical thinking in the review class. In turn, it affects their long-term learning and development in mathematics.

4. The teaching optimization strategy of the general review stage for junior middle school mathematics

4.1. Return to textbook content, paying attention to the foundation of mathematics

The core of the examination has always been around the basic knowledge, no matter how the type of question changes, its essence cannot be separated from this basic content [7]. Just as the building needs a solid foundation, math review also needs a solid foundation. Therefore, in the process of math review in grade 9, the first round of review is very important, which requires students to follow the pace of review, deepen in the textbooks and strengthen their basic knowledge. At this stage, teachers should pay attention to the review and consolidation of students' basic knowledge. By guiding students to further study and understand the basic knowledge in the textbook, teachers can help students build a solid foundation of mathematics and lay a solid foundation for the subsequent review activities [8].

For example, when reviewing the content "Properties of Parallelograms and Decision Theorems," teachers should not downplay the importance of such knowledge simply because students have already learned it. On the contrary, teachers should encourage students to share their understanding of the knowledge. Specifically,

teachers should make it clear that the purpose of the review is not only to review what has been learned but more importantly, to enable students to internalize this knowledge into their mathematical literacy [9]. For this purpose, teachers can encourage students to actively share their understanding of the properties and decision theorems of parallelograms. In the sharing session, teachers can invite several students to the stage and explain the properties of parallelograms in their words, such as "opposite sides are parallel and equal," "diagonals bisect each other," etc. This can not only test the student's mastery of knowledge but also cultivate their expression ability and self-confidence. This way of teaching not only respects students' main position but also provides a platform for students to show themselves. Of course, on this basis, teachers can supplement and deepen the explanation of students to ensure that students have a more comprehensive and in-depth grasp of this basic knowledge.

4.2. Arrange the review process reasonably and carry out scientific planning

To ensure that the review can be gradual, and achieve excellent results gradually and deeply, teachers need to formulate a scientific, reasonable, and detailed review program based on the specific learning status of students, so as to achieve accurate planning and efficient management of the review process. In the implementation of the review program, teachers should adopt a variety of review strategies, such as comprehensive review, thematic review, and comprehensive training, to ensure the comprehensiveness and depth of the review content [10]. Take the review of "rational numbers" as an example, the specific teaching links are as follows:

(1) The teacher leads the students to review the basic knowledge to strengthen the student's understanding of the core knowledge such as the concept of rational numbers and theorems.

(2) By solving mathematical problems to train students' operation ability, so that students can deepen their understanding in practical application.

(3) Intensive training is carried out by designing challenging problems to encourage students to think deeply and consolidate learning outcomes.

This scientific planning and reasonable arrangement can effectively improve the teaching efficiency of the review stage for junior middle school math and provide a strong guarantee for students' review effect [11].

4.3. Carry out diversified teaching activities to improve teaching quality

(1) Use mind mapping to build basic knowledge context

In the review stage of junior high school mathematics, in-depth review and combing of basic knowledge are necessary. To help students better review and summarize the basic knowledge of mathematics, teachers can use the tool of mind mapping in the process of reviewing the senior high school entrance examination. Mind maps can structure and network complex mathematical knowledge, and make abstract problems concrete and intuitive [12]. Through mind mapping, teachers can effectively classify and expand mathematical problems, and help students establish the correlation between mathematical knowledge, which is of great benefit to cultivating students' logical thinking ability and innovation ability. For students, students can systematically sort out math knowledge, and quickly locate the key and difficult points, to better grasp the important knowledge, to improve the efficiency and quality of review in a short time. Taking the review of the "congruent triangle" as an example, teachers can advocate for students to create mind maps according to their learning habits. Teachers can instruct students to take "congruent triangle" as the center of the mind map and develop a series of related branches around it, such as "the definition of congruent triangles," "the characteristics of congruent triangles," "the judgment basis of congruent triangles" and so on. Then, under each main

branch, students can continue to refine and add more sub-branches to expand the specific content under these topics in detail. In this way, students can systematically organize the related knowledge of congruent triangles to form a clear and rich mind map. This will not only help them deepen their understanding of the concept of congruent triangles but also lay a more solid foundation for them to learn mathematics.

(2) Organize cooperative teaching activities

Math teachers can use group learning to help students strengthen their foundations. In the review of Quadratic Function, because it covers a wide range of knowledge, the group cooperation can better sort out the knowledge and check the gaps. In the group, students can discuss and exchange the important and difficult points involved in the content of this chapter, such as the concept of quadratic function and the analytic formula of quadratic function, and can supplement and revise each other during the discussion. Next, the teacher can release the next task and ask the students to think deeply by exploring in groups on method that can be used to obtain the value range of the independent variable of the function. Next is to introduce classic examples in this process, to ensure that students can deepen their understanding of the knowledge of quadratic functions in the learning process of group cooperation, achieving the teaching effect of applying theory to practical problem-solving.

(3) Conduct teaching based on individual differences

In the review course of middle school mathematics examination, junior high school mathematics teachers should fully consider the personality of students in the design of the review period, and stimulate their active thinking, to stimulate students' deep interests in mathematics courses. Due to the differences in the individual and growth environment of each student, their character characteristics and learning methods are also different. This requires teachers to be keenly aware of and respect these differences and to meet the different needs of students through personalized teaching methods [13]. Teachers can use the time between classes or after class to communicate more with students and have a clearer understanding of students' differences. Based on this understanding, teachers can adopt differentiated teaching models and make personalized review plans according to the actual situation of each student [14]. For example, for students with weak foundations, teachers can strengthen the explanation and practice of basic knowledge. For students with strong understanding abilities, teachers can guide them to deeply explore the nature of mathematical problems and improve their problem-solving ability. By implementing differentiated teaching models, teachers can more effectively improve the quality and efficiency of review courses for the mathematics secondary examination, so that every student can get the most out of the review process.

5. Conclusion

Under the background of the reform "double new," schools have placed higher expectations on teachers' teaching quality. As an important node of junior middle school students' academic careers, the development of mathematics review is particularly critical. To effectively improve the effect of students' math review in the senior high school entrance examination, teachers should further strengthen the review guidance during the preparation period, deeply analysis students' math learning status, carefully assess students' math foundation and customize the guide plan for math review in the senior high school entrance examination, to ensure that the quality of students' math review and final test scores can be effectively improved and finally obtain excellent math review results.

Disclosure statement

The author declares no conflict of interest.

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