

Discussion on the effect of mathematics learning method on high school performance

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ABSTRACT

With the continuous advancement of educational reform, the high school mathematics curriculum standards have put forward higher requirements for students' mathematical literacy and comprehensive ability. However, in the third year of mathematics learning, students are faced with great challenges and pressure, and the importance of learning methods is becoming more and more prominent. This paper mainly discusses the method of mathematics learning and its effect on improving the performance of high school students. Firstly, the strategy of senior three mathematics learning method is expounded, including reasonable planning of time, paying attention to basic knowledge and establishing knowledge network. Then, this paper discusses the remarkable effects of these learning methods in improving the performance, such as enhancing knowledge understanding and memory, improving the efficiency of problem solving, cultivating mathematical literacy and improving the ability of taking exams. Through the study of mathematics learning methods and improving the effect of senior high school, it provides a useful reference for high school students and helps them to achieve better results in the third year of mathematics learning.

KEYWORDS

senior three mathematics; learning method; achievement improvement; knowledge network; mathematical literacy

The mathematical knowledge system of senior three is huge, covering function, geometry, algebra, probability statistics and other fields, and the knowledge points are closely related and comprehensive. Traditional learning methods of rote learning and mechanical brush questions have been difficult to meet the needs of senior three mathematics learning, and students need more scientific and effective learning methods to deal with the complex knowledge structure and difficult problems. On the other hand, as an important baton of high school education, the college entrance examination occupies an important proportion in the total score of the college entrance examination, which has a profound impact on students' admission and future development direction. Therefore, improving the math performance of grade three has become the focus of students, parents and teachers. However, at present, there are still some problems in the senior three mathematics teaching. Some teachers pay too much attention to the teaching of knowledge and the explanation of problem-solving skills, while ignoring the guidance and cultivation of students' learning methods. At the same time, students also lack the awareness of independent exploration and summarizing their own learning methods in the learning process, resulting in low learning efficiency and slow performance improvement. In addition, with the rapid development of information technology and the increasingly rich educational resources, students are faced with a large number of learning materials and diversified learning ways, but how to screen and use these resources, choose their own learning methods, has also become a major problem for students. To sum up, it is of great practical significance and practical price to deeply explore the improvement effect of mathematics learning methods for high school students to master scientific and effective learning methods, improve the mathematics learning efficiency and performance, and then improve students' mathematical literacy and comprehensive ability.

1 Senior three mathematics learning method and strategy

1.1 Reasonable planning of study time

Senior three learning task is heavy, the reasonable planning of mathematics learning time is very important. First of all, to the whole school year mathematics study macro planning, the time to review, different stages, such as a round of review focus on basic knowledge system, can arrange more time to understand the concept, master formula theorem and do basic questions; the second round of review for thematic breakthrough and promotion, can appropriately increase the time of problem practice and summary; three rounds of review is mainly simulation test and check the gaps, to ensure enough time for true simulation and error review. In daily study, we should make a daily study plan and clarify the specific time and task of learning mathematics every day. Time can be divided into classroom learning, homework, self-review and preview parts. In class, we should concentrate, follow the teachers thinking, actively participate in the interaction, and make full use of the efficient learning period. Consolidate the knowledge learned during the day and find the weak links; when we review independently, make key breakthroughs on the mistakes and arrange at least 1-2 hours a day; preview can use the spare time to understand the content to be learned in advance. Be prepared for classroom learning. At the

same time, attention should be paid to the reasonable allocation of time to different mathematical plates, such as functions, geometry, algebra, etc., according to their own mastery and the focus of the college entrance examination. For example, if you are weak in the function section, you can arrange an extra 2-3 hours per week for special exercises and review. Also pay attention to the combination of work and rest, avoid long time continuous learning mathematics leads to fatigue and low efficiency, appropriate arrangement of rest and entertainment time, such as every 1-2 hours rest 10-15 minutes, the right amount of physical exercise every day, in order to maintain a good learning state and mental state.

1.2 Consolidate the basic knowledge

Basic knowledge is the cornerstone of senior three mathematics learning, which must be firmly mastered. Return to the textbook is the key to consolidate the solid foundation, to carefully read every knowledge point, examples and exercises on the textbook. For mathematical concepts, to word for word to understand its meaning, the connotation and extension of clear concept, such as reviewing the concept of the function, to deeply understand the function definition, domain, domain, monotony, the meaning of parity, not a little knowledge or rote learning, through practical examples and graphics to deepen understanding. It is also essential to master every formula and theorem in the textbook. We should not only remember the content of the formula theorem, but also understand its derivation process, and master the scope and conditions of its application. For example, when reviewing the general term formula and the first n term and formula of the arithmetic series and arithmetic series, we should derive the formula by ourselves and understand the meaning and function of each parameter in the formula, so as to use it flexibly when solving the problem. At the same time, we should do some simple examples and exercises to consolidate the mastery of the formula theorem, so as to draw inferences from one another. Do a good job in the textbook examples and exercises is an important link to consolidate the foundation, the textbook examples are classic questions, with a strong representativeness and demonstration, to carefully analyze the ideas and methods of each example, summarize the law of problem solving problems. When doing exercises, to pay attention to quality rather than quantity, do not blindly pursue the speed and quantity of the problem, to ensure that each question is thoroughly understood, the wrong questions should be timely sorted out to the wrong questions, analyze the reasons for the mistakes, regular review and consolidation, to avoid making mistakes again. In addition, can also strengthen the basic knowledge by building knowledge framework, high school mathematics knowledge according to certain logical relationship and integration, form a complete knowledge system, it can better understand the connection and the difference between knowledge, help to grasp the mathematical knowledge on the whole, improve the problem solving.

1.3 Establish a knowledge network

Senior three mathematics knowledge points, the establishment of knowledge network will help to systematize these scattered knowledge points, so as to better understand and use. First of all, based on the teaching material, the knowledge points should be sorted out according to the order of the chapters, and the core concepts, theorems and formulas of each chapter should be clearly defined. For example, when reviewing the section of functions, we should systematically organize the concepts of function definition domain, value domain, monotonicity, parity, periodicity, as well as the images and properties of various functions, and find out the internal connections and differences between them. Mind mapping and other tools can be used to build a knowledge network and present each knowledge point in a graphical way to make the knowledge structure more clear and intuitive. Taking sequence as an example, the general formula, first n term and formula and properties of equal sequence and equivalence sequence are listed respectively, and then find out their association with other mathematical knowledge, such as the relationship between sequence and function, the application of sequence in practical problems, etc. These contents are connected through mind mapping for memory and review.

In the process of establishing the knowledge network, we should pay attention to the horizontal and vertical connection between the knowledge points. Horizontal connection refers to the integration of knowledge between different chapters and different plates, such as the connection between trigonometric function and plane vector and analytic geometry, through which the knowledge point can be deepened understanding and application ability; vertical connection refers to the expansion and extension of the same knowledge point in different levels of difficulty and different application scenarios, such as from the simple application of basic inequality to the application of complex functions. At the same time, we should constantly improve and supplement the knowledge network. With the in-depth of learning and the accumulation of problem-solving experience, we will find the connections and rules between new knowledge points, and add these contents to the knowledge network in time to make it more rich and complete. Through the establishment of knowledge network, we can quickly locate the required knowledge when solving problems, improve the efficiency of solving problems, and improve the mathematics learning effect on the whole.

2 The improvement effect of the senior three mathematics learning method on the performance of high school students

2.1 Enhance knowledge understanding and memory

The senior three mathematics learning method has a significant effect on enhancing the understanding and memory of knowledge. First of all, reasonable planning of learning time can let students have enough time for in-depth learning and repeated consolidation of knowledge points. For example, the daily study time will be reasonably allocated, and a period of time will be specially arranged to review the mathematical knowledge learned the previous day before. Through repeated memory, the understanding and impression of the knowledge points can be deepened, so that the knowledge can be more firmly rooted in the mind. Strengthening the basic knowledge is the cornerstone of understanding and memory. When students have a thorough understanding of the basic concepts, theorems, formulas and other basic knowledge, they can better build the knowledge system, so as to remember the relevant knowledge more easily. For example, when learning the monotonicity of functions, only by truly understanding the definition and determination method of monotonicity can we be accurately used in the process of solving problems, and we can better understand and remember the more complex function properties. The establishment of knowledge network can organically connect the scattered knowledge points and form a complete knowledge system. This systematic learning method helps students to grasp the mathematical knowledge on the whole, understand the internal logical relationship between each knowledge point, so as to improve the memory efficiency. For example, by constructing the knowledge network of the triangular function, the definition and properties of the triangular function, Image, formulas and other contents are related to each other, students no longer recite each knowledge point in isolation, but can integrate them, remember more firmly and easier.

2.2 Improve the efficiency of problem-solving

The reasonable planning of learning time in the third year mathematics learning method can enable students to targeted problem solving training and improve the efficiency of problem solving. By making a detailed study plan, students can arrange their time for special exercises, and focus on solving a certain type of questions, so as to master the methods and skills of this type of questions in a short period of time and improve the speed of solving problems. For example, when reviewing the chapter of series, we specially arrange a period of time to practice the concentration of sequence questions. Through a lot of exercises, students can quickly identify the types of sequence questions and skillfully use the corresponding problem solving methods. Strengthening the basic knowledge is the key to improve the efficiency of problem solving. Only by mastering the basic knowledge solid enough can we use the relevant knowledge quickly when solving problems and avoid wasting time due to the ambiguity of concepts and formulas. For example, when solving the simplification problem of trigonometric function, if students are familiar with the basic formula and properties of trigonometric function, they can quickly carry out simplification and calculation, without frequently consulting the formula or calculation errors in the process of solving the problem, so as to greatly improve the efficiency of solving the problem. The establishment of knowledge network helps students to quickly locate the required knowledge points and problem-solving methods when solving problems. When faced with a math problem, students can quickly find it from the knowledge network they build to the relevant knowledge points and problem solving ideas, avoid blindly trying a variety of methods, save time for solving problems. For example, when solving the comprehensive problems in analytic geometry, students can quickly associate the position relationship between the straight line and the conic curve, the weader theorem and other related knowledge through the knowledge network, so as to quickly find the breakthrough to solve the problem and improve the efficiency of solving the problem.

2.3 Cultivate mathematical literacy

The reasonable planning of learning time in the third year of mathematics learning method provides a guarantee for the cultivation of mathematical literacy. Students have enough time to deeply learn mathematical knowledge, which can not only master the problem-solving skills, but also experience the ideological methods and cultural connotation of mathematics in the learning process, so as to gradually cultivate mathematical literacy. For example, in the process of learning the history of mathematics, understanding the stories of mathematicians and the development process of mathematics can stimulate students interest in and love for mathematics, and cultivate students mathematical cultural literacy. Consolidating the basic knowledge is the foundation of cultivating mathematical literacy. Only with a deep understanding and mastery of the basic knowledge can we further understand the essence of mathematics and thinking methods and improve mathematical literacy. For example, when learning plane vector, through learning the basic concepts, operations and properties of vector, students can realize the important role of vector as a tool in solving geometric problems and physical problems, so as to cultivate students mathematical application consciousness and

innovative thinking. The establishment of knowledge network helps students to understand mathematical knowledge from a higher level and cultivate mathematical literacy. Through the construction of knowledge network, students can find the internal connection and laws between mathematical knowledge, realize the rigor and logic of mathematics, so as to improve the level and quality of mathematical thinking. For example, in constructing the mathematical analysis of the knowledge of theWhen knowing the network, students can have a deep understanding of the relationship between limit, derivative, integral and other concepts, realize the ideological method of mathematical analysis and the rigor of the theoretical system, and cultivate students mathematical abstract thinking and logical reasoning ability.

2.4 Improve the exam-taking ability

The reasonable planning of learning time in the mathematics learning method of senior three can allow students to review and prepare for the exam in an orderly way and improve their ability to take the exam. Through the formulation of a scientific study plan, students can reasonably arrange the review progress, systematically review and consolidate each knowledge point, and have enough time to conduct the simulation test and wrong questions, so as to better adapt to the pace and requirements of the exam, and improve the ability to take the test. For example, in the last few months before the college entrance examination, make a detailed review plan, and gradually review the knowledge points and train the mock exam according to the plan, which can make students more calm and confident in the exam. Consolidating the basic knowledge is the key to improve the ability of test-taking. Most of the questions in the college entrance examination math examination paper are the examination of the basic knowledge, only to the basic knowledge of the solid grasp, in order to achieve better results in the examination. For example, when answering multiple choice questions and fill-in-blank questions, many questions directly examine the basic concepts, formulas and theorems. If students have a good grasp of the basic knowledge, they can quickly and accurately answer these questions, getting more time and scores for the following answers. The establishment of knowledge network helps students to quickly and accurately call the knowledge they have learned in the exam and improve their ability to take exams. When students encounter problems in the exam, they can quickly find them from the knowledge networkRelated knowledge points and problem-solving ideas, to avoid losing points because of knowledge forgetting or thinking confusion. For example, when solving the proof questions of solid geometry, students can quickly associate with the relevant theorems and methods through the knowledge network, and prove them systematically to improve the accuracy and completeness of the answers.

3 Summary

The senior three mathematics learning method has a significant effect on improving the performance of high school students. Reasonable planning of time, consolidating basic knowledge, establishing knowledge network and other learning methods can enhance students understanding and memory of knowledge, improve the efficiency of problem solving, cultivate mathematical literacy and improve test-taking ability. Therefore, in the process of learning mathematics, senior three students should actively adopt scientific and effective learning methods, constantly optimize the learning strategies, improve the learning effect, and make full preparations for the excellent results in the college entrance examination. At the same time, teachers should also strengthen the guidance of students learning methods, to help students better adapt to the learning requirements of senior three mathematics, to achieve the improvement of grades and the comprehensive development of mathematical literacy.

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