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Reasons and Solutions to Affect the Mathematical Computing Ability of High School Students

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***Abstract* – Mathematical operation is one of the six core literacy of high school mathematics [1], which is also the most basic requirement for students' ability. Throughout the national college entrance examination, the new curriculum standard test paper can show that the requirements for students' computing ability are getting higher and higher. In the classroom teaching in recent years, it has been found that there are many problems in the mathematics computing ability of high school students. Although the majority of high school mathematics teachers realize that they don't pay enough attention to computing power, they have no targeted solutions, which makes the high school students' computing power not available. Effective development has restricted the development of students' comprehensive ability. Therefore, the author analyzes the causes of low mathematics computing ability of high school students and proposes strategies to improve students' computing ability.**

***Keywords* – High School, Mathematics Computing Ability, Strategy.**

I. INTRODUCTION

Mathematical computing ability is the ability training that must be paid attention to in classroom teaching. Mathematical computing requires fast and accurate calculation. However, students often neglect computing when they study. The development of students' computing ability is not far from our expected goal. Students do not know enough about the importance of computing power. Some students have poor computing habits and lack of computing skills. There are several reasons for the analysis.

II. THE REASONS THAT AFFECT THE MATHEMATICS COMPUTING ABILITY OF HIGH SCHOOL STUDENTS

A. *The Influence of Teachers' Professional knowledge and Teaching ability on Mathematical Computing Ability*

The teaching ability of teachers will affect the development of students' mathematical computing ability. First of all, teachers have solid mathematical knowledge, but the corresponding situation of the trial teaching curriculum is neglected, and the teaching environment that makes students interested and able to participate actively in learning is neglected. Some students who are not very solid and slowly slip away are slowly lost interest in mathematics and slowly eliminated, which is one of the reasons for the low scores of students. Secondly, in order to avoid the class, many of the teachers in the textbooks are left to the students themselves, and the complicated problems are also flashed. The exercises after the textbooks cannot be processed in time. Finally, teachers lack the necessary guidance to improve students' computing skills. There are also teachers who only pay attention to the idea of solving problems, but they do not pay attention to neglecting the guidance of the normative, rigor, and simplicity of the operation, and the poor computational ability of students is attributed to the students' calculation is not serious.

B. *Students' Mathematical Learning methods are Unreasonable*

In the process of learning, students neglect the derivation process of definitions, theorems, and formulas, pay attention to the rote memorization of conclusions, and are unskilled in mastering basic formulas and rules. They always rely on notes and textbooks. For the teacher to explain the examples in the classroom can not fully understand, will not learn and use, can only imitate the problem-solving process, so learning is easy to form short-term memory, but the probability of forgetting is very large, leading to a similar problem in the problem knows to learn However, I forgot the specific answer process. For example, there are many inductive formulas in trigonometric functions. The mistake of a symbol and an angle of trigonometric function will lead to calculation errors. The mutual transformation of relations between trigonometric functions also affects the correctness of the operation results. There are many students in elementary school. When I was in junior high school, I developed bad calculation habits, such as over-reliance on mental arithmetic. When I was writing, the draft was too messy. Some people were too saved, and the draft paper was full of drafts. There are still many students who find problems and do not, do not think and explore independently, and are accustomed to asking teachers and classmates. Because of the lack of independent thinking habits and the process of not digesting knowledge, after listening to the explanations, I feel that I understand, actually there is no real understanding of the nature of the problem, the test can not think independently, resulting in unsatisfactory results.

C. *The Impact of Reading Questions on the Mathematical Computing Ability*

To solve math problems, you must first carefully examine the questions. In the usual practice, many students have problems in confusing and confusing the meaning of the topic, so the success rate of solving the problem will also be reduced [2]. In order to save time, the students often swept away the problem. Failure to carefully analyze the correlation between the topics ultimately leads to errors in solving the problem. This phenomenon is very common.

Example:

It is known that $c > 0$ and $c \neq 1$

Set P: the function $y = c^x$ monotonically decrease in the range of R. Q: the function $f(x) = x^2 - 2cx + 1$ monotonically in increase in the range of $\left(\frac{1}{2}, +\infty\right)$.

If it is one true or false, ask for the value range of c. The student ignores the given range of c in the question, causing the solution error.

D. *Mathematical thinking Methods do not Grasp the Impact of Mathematical Computing Ability*

The mathematical thinking method embodies the essence of mathematics and is a bridge between mathematics knowledge and mathematical operations. Mastering the mathematical thinking method to improve the problem-solving ability of high school students, choosing the correct thinking method is the premise of accurate calculation, and it is also a guarantee to make the operation simple, and can achieve the learning effect with half the effort. Many students believe that sea tactics can improve their performance. Student feedback ignores the summarization and reflection of mathematical thinking methods in the learning process. Students do not know that the mastery of mathematical thinking methods can adapt their mathematical computing ability to other mathematical abilities and help students improve. Mathematical computing power.

E. *The Impact of Information Technology on Mathematical Computing Capabilities*

With the advancement of society and the rapid development of information technology, every student and computer student who has become popular in mobile computers has online learning through the Internet. The increase of various online search software and video course websites has advantages and disadvantages for student learning [3]. Students can find the place where they can't understand in the classroom. They can watch the video course at any time to learn, not only solve the students' problems, but also exercise the self-learning ability of high school students. However, the drawback of rich network resources is that there are many low-quality video courses that mislead students to learn. Students can't choose to learn knowledge in a limited time, but they make students lose interest in mathematics. High school students rely on excessively relying on answers or using learning software to search for questions in the process of solving problems. It is easy to get answers to the questions, and will not seriously carry out independent thinking and mathematical operations, so that their mathematical computing ability is gradually reduced. It can be seen that although the progress of the network can help students to learn better, improper use can also have a counterproductive effect on the learning of high school students.

III. THE STRATEGY TO IMPROVE THE MATHEMATICS COMPUTING ABILITY OF HIGH SCHOOL STUDENTS

The strength of high school students' computing ability directly affects students' mathematics scores. The cultivation of students' computing ability is something that teachers should pay attention to. The computing power is continuously developed and deepened with the content of mathematics teaching, and is cultivated under the continuous improvement of other abilities. Practice has proved that if high school teachers can seriously analyze and study the students' computing ability and take effective methods, the high school students' computing ability can be improved through the reasonable guidance and training of teachers in the normal teaching process. In view of the current situation of mathematics learning in our school, and my teaching experience for several years, I will improve the computing power of students from the following aspects.

A. *Strengthen the Study of Concepts, Formulas and Rules*

Teachers teach concepts, theorems, formulas, and rules, pay attention to the process of knowledge generation, set up reasonable situations, guide students to explore research, and finally come up with concepts, formulas, and rules. For example, when learning the conic ellipse and its standard equations, let the students prepare the string before class, and explore the process of ellipse formation in the class, let the students draw and think, what quantity is changing during the movement of the nib on the basis of full thinking, the definition of ellipse is expressed in mathematical language, paving the way for the definition of solving problems later, and the computing power has been improved. In the process of formula memory, choose the appropriate method to help students quickly remember, so that they can remember the formula in the process of understanding the relationship between the two. For example, in the teaching of trigonometric formulas, the induction formulas are more and similar, and they are easy to remember, such as: the odd change is unchanged, and the symbol looks at the quadrant.

B. *Strengthen the Training of Basic Skills and Skills*

Teachers usually pay attention to the training of skills and skills, and the students' computing ability can be improved quickly. Practice has proved that mathematics computing ability can be cultivated through systematic

and purposeful training of teachers. Therefore, it is necessary to practice more, skillfully and repeatedly according to the cognitive rules of students. However, due to the limitations of class, we do not have enough time to train students [4]. We can use the self-study class to take 10 minutes to practice. Teachers should prepare in advance to train students' knowledge or skills and strictly control time. This kind of training can not only help students to review the knowledge of forgetting, but also strengthen some concepts and formulas, complete the calculation in 10 minutes, improve the computing skills and ability. Teachers can also use the spare time to calculate complicated and difficult topics in the classroom, regardless of time, give students more space to think and communicate, explore different ways of solving problems through different perspectives, and get a question. More solutions. This makes full use of spare time to develop students' computing skills and improve their math skills and skills.

C. *Well-designed Variant Training*

In the classroom teaching, carefully designing the variant training of classroom exercises and guiding students to divergent thinking to find the solution method is a very effective way to improve students' computing ability. In the mathematics classroom of our school, teachers often use this method. For different levels of students, different changes can enable students to get different training in computing. Teachers should avoid simple repetition when using variant teaching. We must try our best to change the middle to seek "new", change to seek "different", change to seek "living", and change to seek "wide". Mathematical variants must have a certain degree of slope in order to motivate students to think positively. Variants need to be progressive, from easy to difficult, to raise the curiosity of students in the edge design issues that students can think of. This kind of training can greatly improve students' interest in learning and concentrate students' attention to improve their computing skills. For example: the example and variant training that teaches the basic inequality to find the most value.

Example:

When $x>0$, ask for the minimum of $x+\frac{1}{x}$.

Variant Training:

1. When $x>0,$ ask for the minimum of $x+\frac{4}{x}$.
2. When $x>1,$ ask for the minimum of $x+\frac{1}{x-1}$.
3. When $x<0,$ ask for the maximum of $x+\frac{1}{x}$.
4. When $x<0,$ ask for the maximum of $x+\frac{1}{x-1}$.

Through the explanation of the example and the consolidation of the variant training, the students can truly understand the conditions under which the basic inequality takes the most value, the computing power has been improved.

D. *Using Mathematical thinking Methods to Divergent Thinking*

The main ideas in middle school mathematics: function and equation thought, combination of number and shape, transformation and transformation of ideas, classification and discussion ideas. The function and equation idea is to transform the non-function problem into a function problem [5]. Through the study of the function image and its properties, the problem is finally solved. The idea of combining numbers and shapes is the combination of numbers and shapes. "Number" is all the content in algebra; "shape" is geometric figure, function image and so on. The idea of classification discussion is to distinguish mathematical objects into different kinds of thought methods according to the similarities and differences of the essential attributes of mathematical objects. It can reveal the inherent laws between mathematical objects, and help students to summarize and summarize mathematical knowledge. Chemical. Pay attention to the penetration of mathematical ideas in classroom teaching. For example: 2018 National II Volume <<Inequality Selection>>

Set the function $f(x)=5-|x+a|-|x-2|$.

1. When $a=1$. ask for the solution set of inequality $f(x)\geq 0$

2. If $f(x)\leq 1$. ask for the value range of a.

In the treatment of this topic, we focus on cultivating students' divergent thinking and the ability to solve multiple problems.

Student 1: The application is definitely worth solving geometrically. The inequality is changed to $|x-2|+|x+1|\leq 5$. Find that the point where the sum of the distances of -1 and 2 is equal to 5 is -2 and 3, so the inequality solution set is $\{x|-2<x<3\}$. Apply the combination of number and shape to solve. It's intuitive and easy to solve.

Student 2: Apply the zero point segmentation method. The three categories are removed from the absolute value symbol to solve the discussion.

Student 3: Apply the function and equation to solve the problem, construct a piece wise function to make a function image, observe the image to find the zero point of the function -2 and 3. Write the solution set $\{x|-2<x<3\}$.

E. *Train Students to sort out Notebooks and Wrong Books*

In the usual teaching process, many students are seen because they are not very understanding of the teaching content, but they are rote, which makes the memory short-lived and easy to forget. The mistakes that students make while computing are not always new, and there are often recurring situations. Nowadays, high school students usually don't pay attention to accumulating experience. They don't have the habit of taking notes in class. They don't have the impression of the questions they have done before. It is wrong to be wrong. So it is very useful to guide students to organize their notebooks. In some key topics, the teaching of typical topics, remind students to organize these topics into their own exercises, often take a look at it, which is conducive to students familiar with the problem-solving ideas to strengthen the key steps. For some mistakes, you can sort them into your own wrong books and read them frequently. In order to make students insist keeping their notes, the school regularly holds excellent miscellaneous questions and shares them with others. After a long time, students will form a habit of accumulation [6].

IV. CONCLUSION

The development of students' computing ability is influenced by many factors. High school mathematics teachers should pay attention to the cultivation of computing ability when they carry out classroom teaching activities, so that students can form a good mathematical problem-solving thinking mode [7]. Let students experience the joy of computing in the process of solving problems, so as to achieve the purpose of improving students' mathematical computing ability.

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