

Research on Strategies of Improving Mathematics Reading Ability in Secondary Vocational School

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Abstract: Reading is the premise of learning. In the information age, the cultivation of secondary vocational school students' mathematics reading ability is an important way to cultivate students' comprehensive learning ability and improve the core quality of mathematics. Therefore, more and more teachers attach importance to the cultivation of students' mathematics reading habits and the improvement of reading ability, so as to promote students' mathematical language expression ability, arouse students' thinking about mathematical problems, and promote students' mathematical language transformation ability. This paper discusses the relationship between middle school students' reading habits and mathematics achievement, and gives some suggestions on how to cultivate secondary vocational school students' good reading habits and improve their mathematics reading level

1. The current situation of mathematics reading ability of secondary vocational school students

The nature of mathematics curriculum mentioned in the Mathematics Curriculum Standards for Secondary Vocational Schools is that mathematics is the science of studying quantitative relations and spatial forms, the basis of other professional and technical learning, the necessary tool for solving practical problems in production practice, and one of the necessary qualities for the future career development of secondary vocational students. In today's era of information and big data, mathematics plays an increasingly important role in the follow-up education and work services. Because mathematics requires students to have good mathematical abstraction and logical reasoning ability, secondary vocational school students generally think that mathematics is a very difficult subject to learn, many students mention that the understanding of concepts is always vague or unclear, information extraction is difficult or biased, and they are afraid of common mathematical terms^[2]. Therefore, many secondary vocational school students no longer like to read mathematics books and learn mathematics knowledge on their own initiative, and they are almost not interested in extracurricular mathematics reading.

Secondary vocational school students in junior high school are weak in learning, and they often rely on intuition to learn and perceive mathematics, only pay attention to the conclusion of the problem, and are unwilling to spend time to understand the logical relationship, so the development of students' mathematical literacy quality is limited. In secondary vocational schools, with the

addition of professional learning burden, students are more willing to practice professional skills, invest less time in mathematics learning, and often neglect mathematics reading to understand mathematics knowledge. Exercises after class are often misread, missed and incomplete. When reading mathematical materials, they cannot grasp the key points. In the review of higher vocational examinations, they are always confused about the known or hidden conditions given in the questions, unable to obtain useful mathematical information, and often stuck in the excavation of hidden conditions, unable to understand the mathematical terms. At the same time, students cannot correctly understand the concise mathematical definitions and theorems in textbooks, which leads to their inability to understand the true meaning of the words. Because students do not fully understand the concepts and theorems, it is difficult to grasp the implicit conditions of the concepts, and the analysis of the questions is not thorough and meticulous enough, so they cannot accurately respond to the questions. Especially when the language of the topic is more, the context is more complex, many conditions can not be sorted out, students will have a fear of difficulties in mathematics, do not want to read, it is difficult to complete the integration and transformation of mathematical information, do not have the ability to correctly analyze the topic, or even fear of difficulties, give up directly.

Based on this, this paper analyzes the current situation of mathematics reading of secondary vocational students, finds out the root of the lack of mathematics reading ability, and explores new methods to improve the mathematics reading ability of secondary vocational students, so that students can gradually read independently, gradually begin to explore mathematics independently, develop mathematical thinking and abstract generalization ability, and improve students' mathematical literacy.

2. Research on the Strategies of Improving Mathematics Reading Ability

Mathematical reading ability is the communication ability between students and mathematical words, and students can extract information from them by reading words. It is necessary to master the mathematical knowledge, understand the functional meaning represented by the mathematical symbols, and the use of formulas and theorems. By reading the text information in mathematical problems, students can analyze and organize them into problem models that can be solved by mathematical methods^[3]. Whether a knowledge can be correctly understood and a problem can be solved often depends on students' mathematical reading ability. Then mathematical writing is abstract and difficult for students to understand, so we need to improve students' reading ability and level, so that students can master certain mathematical reading skills, master the correct mathematical methods through reading, and solve mathematical problems smoothly. Next, we will improve students' reading ability from three aspects^[1].

2.1 Mathematics reading is introduced into the classroom to improve the understanding of basic knowledge of mathematics

The reason why secondary vocational school students have a weak mathematical foundation is that they always have a smattering of knowledge and do not really understand the essence of mathematical knowledge. Therefore, by introducing the content of reading textbooks in teaching, students can fully understand the differences between mathematical language and other languages, develop a good habit of careful and intensive reading in long-term careful reading, form an accurate understanding and expression of mathematical words, and grasp the logical relationship between mathematical terms. In this way, the more carefully the math textbook is read, the more quickly it can help students accumulate the understanding of basic knowledge, basic terms, theorems and formulas of mathematics, which is helpful for solving and reading problems in the next stage. In the

daily classroom, teachers should remind students to do the following three things: First, pay attention to the causes and consequences of the concept when learning new concepts, clarify the details of the concept's language expression, grasp the preconditions of the concept, and draw specific conclusions. Do not unconsciously enlarge the scope of the concept's use. Second, for the study of theorems and formulas, teachers should remind students to pay attention to the preconditions for the use of theorems and formulas, and more importantly, the accurate expression of each symbol language. The positions of the upper, lower, left and right cannot be changed at will. When formulas are similar, it is necessary to compare and learn to find out the differences to avoid making mistakes. Third, for the examples on the books, the teacher should remind students to do it first, and then carefully check the answers in the textbook to find out what they missed, what can be added better, the writing order that suits them, and the standard answers that suit them.

For example, when learning the knowledge of sufficient and necessary conditions, students should understand who is the condition and who is the conclusion, and determine the order so as not to make mistakes. When learning the application of inequalities, students should pay attention to the fact that two positive numbers are the premise of the mean value theorem, and the value of the equal sign must be calculated, because this is the key to finding the maximum value. When learning the exponential logarithm operation section, students should carefully observe the correct writing method of each formula symbol, the position of the base number and the true number, and the use of the algorithm. They should be familiar with it through examples. When learning the definition of dihedral angle in solid geometry, there are always students who cannot understand that the range of dihedral angle is 0° to 180° . That's because the students didn't read the definition carefully. The definition clearly mentions the angle formed by two and a half planes, so that they can understand it correctly.

2.2 Training on reviewing mathematical exercises to improve reading comprehension of mathematical exercises

Examination is one of the important methods to test the effect of mathematics learning. We always require students to do a lot of consolidation exercises, but in the exercises, we often find that it is difficult for students to really understand the mathematical questions. As students say, the literal meaning of the questions is to understand, but the mathematical logic behind them is difficult to understand. Therefore, it is necessary for us to strengthen students' reading ability of exercises, teach students how to understand the logical relationship between sentences, how to transform written language into mathematical language, help students understand the meaning of mathematical language, and correctly write and express it, and complete the whole process of problem solving. First of all, we need to extract the key information in the stem, which is what we often call the condition of solving the problem, is obvious or hidden, ignoring the useless background information of the problem. Secondly, list these useful conditional information, sort out the formulas and theorems we usually use, and pay attention to what conditions are missing. Finally, the unknown conclusion is solved by careful calculation according to the known conditions.

Example: In order to improve production efficiency, a company has invested 20 million yuan of its existing funds into production since the beginning of 2020, so that the funds have increased by 50% by the end of the year. Assuming that the annual growth rate remains unchanged, the company needs to pay taxes of 5 million yuan per year as required, and invest the remaining funds into the production of the next year. Assuming that the remaining funds after the capital is turned in at the end of the n th year are b_n million yuan, the general formula of b_n is obtained

Analysis of known conditions: 20 million at the beginning of the year and 20 million at the end of the year 2000×1.5 After handing in 5 million, the rest $2000 \times 1.5 - 500$. Since the annual

growth rate thereafter is the same as in the first year, the end of the second year is $(2000 \times 1.5 - 500) \times 1.5 - 500$. At the end of the third year $((2000 \times 1.5 - 500) \times 1.5 - 500) \times 1.5 - 500$. Because we can find the law of the former and the latter: $b_n = b_{n-1} \times \frac{3}{2} - 500$. From this we can calculate $b_n = \frac{3}{2} \times b_{n-1} - 500 = \left(\frac{3}{2}\right)^2 b_{n-2} - \frac{3}{2} \times 500 - 500 = \left(\frac{3}{2}\right)^{n-1} b_1 - 500 \times \left(1 + \frac{3}{2} + \dots + \left(\frac{3}{2}\right)^{n-2}\right) = \left(\frac{3}{2}\right)^{n-1} \times 1500 + 1000$.

2.3 Rich extracurricular reading content to enhance enthusiasm for mathematics learning

We can not only cultivate students' mathematical reading habits in the classroom, but also improve a wide range of reading materials for students. Therefore, we should not only read the textbook knowledge in the classroom, but also let students read the history of the development of mathematics. Let students understand how difficult it is to find a mathematical definition, why a mathematical definition is written like this, and what its origin is. Let students experience the process of mathematicians' continuous exploration and discovery of mathematics, so that students are encouraged to learn mathematics more seriously. Understanding the origin of mathematical knowledge can also make students understand the connection before and after knowledge and improve their interest in learning. Therefore, we can collect some excellent mathematical history books in advance, so that students can fully read the content, so that they can fully immerse in the world of mathematical reading. For example, add a batch of mathematics books to the classroom to enhance the reading atmosphere, recommend the required reading list, focus on mathematics culture, mathematics and professional communication, and find mathematical methods for professional problems. When learning the first chapter of set, students can go to the library to consult G. Cantor's article entitled "A Property of All Real Algebraic Numbers" published in 1874. It marks the birth of set theory, understands the significance of the discovery of set theory, and stimulates students' interest in learning. When learning inequalities in Chapter 2, students can learn which mathematician put forward mean inequality and what important applications mean inequality has. When learning the functions in Chapter 3, students can refer to the nine chapter arithmetic of Qin Jiushao, a mathematician, to understand the numerical solution of high-order equations, feel the development of ancient Chinese mathematics, and enhance cultural self-confidence.

3. Reflection on the Strategies of Improving Mathematics Reading Ability

With the improvement of students' mathematics reading ability, it is not difficult to find that the usual careless mistakes no longer appear, students can accurately understand the knowledge points in the textbook, can accurately find out the hidden conditions in the stem when solving problems, and can quickly complete the calculation, mathematics learning is no longer difficult, no longer at a loss. In the mathematics extracurricular reading sharing after each chapter, students share their collected reading materials in groups, which can make each student feel the charm of mathematics, the important position of mathematics in social development, and stimulate students' motivation and confidence in learning. In daily teaching, the value of reading activities should not be ignored. The expanded part of the textbook and the cultural background before and after the chapter are also worthy of our in-depth reading. Teachers should leave enough reading time for students in the classroom and put forward specific requirements for students' reading. When reading comprehension ability keeps up with problem-solving ability, problems will be solved naturally. Teachers should guide students to summarize their knowledge points of learning difficulties, and lead students to read and understand relevant chapters together, so that students can feel that reading

is not a waste of time, but an effective way to improve their mathematical ability. At the same time, teachers should provide students with mathematical books and materials that can be read to save time for consulting materials.

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