

A New Exploration of Stratified Teaching Strategies in Secondary Vocational Schools Assisted by Precise Stratification

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Keywords: Core literacy; Secondary vocational mathematics; Hierarchical teaching strategies

Abstract: With the deepening of educational reform, the curriculum standards of secondary vocational schools emphasize the importance of students' dominant position, the improvement of teachers' teaching methods, and the cultivation of core literacy as an important task. However, it is worth noting that in the stage of secondary vocational education, there are obvious individual differences in students' mathematical foundation, learning level and overall mastery of knowledge. If we do not pay attention to it and still adopt a unified way of teaching and review, it will inevitably lead to some students unable to keep up with the teaching progress and affect their learning. Therefore, teachers must actively adopt hierarchical teaching methods to implement classroom teaching to ensure that students at each level can make progress on the original basis.

1. Introduction

In secondary vocational mathematics classroom, moral education is the fundamental task of education, and the development of students' core mathematics literacy is an important guarantee to complete this task, but also an important standard to improve the quality of mathematics classroom teaching.^[2] Therefore, from the current situation of mathematics classroom teaching in secondary vocational schools, the teaching mode needs to be reformed according to the needs of core literacy training in the new curriculum reform, so as to improve the efficiency of classroom teaching, so as to integrate core literacy with mathematical knowledge, maximize the potential of students, and optimize the effect of students' comprehensive ability training.^[3]

2. Difficulties in Traditional Mathematics Teaching in Secondary Vocational School

2.1. Students have weak foundation and lack of interest in learning.

Students will enter the high school learning stage after the completion of junior high school learning, but most of the students who enter the secondary vocational school have weak mathematical foundation, usually do not pay enough attention to mathematics learning, do not fully realize the importance of mathematics learning, many students even think that they only need to learn the

relevant professional technology. In such a state of mind, they will put more energy on the study of professional skills. Although mathematics teachers always spend a lot of time tutoring students in mathematics learning, it is difficult to improve students' mathematics performance on the whole. There are great individual differences among students, and it is often difficult for teachers to fully grasp students' mathematics learning progress. Some students lack the interest and motivation to learn mathematics. ^[1]They learn mathematics just to cope with the final exam and think that they only need to meet the requirements of the exam.

2.2. Students have obvious differences and lack of good habits.

Mathematics learning is a process of continuous learning. Only when students master the correct learning methods and always persevere, can they achieve good results in mathematics. Due to the influence of many factors, students often lack initiative and enthusiasm in the actual learning process, individual differences are large, and they do not develop good learning habits. Some students think that mathematics knowledge is relatively difficult to learn, they are afraid of learning mathematics, coupled with the impact of class hours and teaching process, students can not fully keep up with the progress of teaching and learning requirements in the actual learning process. After class, students will not take time to consolidate and learn mathematics knowledge, all kinds of factors seriously affect the learning effect of students, and ultimately lead to students' weariness of learning.

3. The Necessity of Implementing Stratified Teaching Strategy in Secondary Vocational Mathematics Classroom

3.1. It is conducive to exploring students' potential and improving their learning enthusiasm.

Stratified teaching, as its name implies, is to teach students in accordance with their aptitude, adopt different teaching methods and give classified guidance to students according to their intellectual factors and knowledge base. For the students with weak mathematical foundation and poor acceptance ability, in their daily learning, they often have the mood of learning fatigue and learning resistance. In order to affect the overall progress, stratified teaching is necessary. In this way, teachers can treat each student in different levels, meet each student's learning needs, adopt different hierarchical teaching methods, arrange gradient homework after class, and give hierarchical assessment criteria and evaluation, which can improve students' learning enthusiasm.

3.2. Help to improve classroom efficiency and achieve teaching objectives

For students of different levels, teachers should prepare lessons in advance, formulate corresponding teaching objectives according to the actual situation of each person, avoid the one-size-fits-all approach, so that students of different levels can experience the joy of success and the sense of achievement of learning to understand knowledge in the classroom, so as to make the classroom atmosphere more active, optimized, efficient and harmonious. In addition, there should be stratified teaching objectives, different levels of students have different objectives and requirements, for example, in the classroom questioning link, you can set up some simple questions, let the poor students take the initiative to answer, increase classroom participation, form a good teacher-student interaction, but also can set up some more difficult questions for the top students to think after class, expand their knowledge. Spread the breadth of their thinking.

4. Research on Stratified Teaching Strategies of Mathematics in Secondary Vocational Schools under Core Literacy

4.1. Continuous hierarchical lesson preparation, smooth implementation of hierarchical teaching

There are great differences in students' personality in mathematics teaching in secondary vocational schools, and the students' foundation is also uneven, so the hierarchical lesson preparation of mathematics in secondary vocational schools has become a key step before hierarchical teaching. Teachers must fully understand the current learning situation of students in the class to ensure the smooth and efficient development of follow-up teaching activities. In order to improve the pertinence when preparing lessons at different levels, we need to grasp the learning situation of each student, set up some problems and tasks for students at different levels that are in line with their learning abilities, and add breakthrough problems appropriately on the basis of ensuring that students at all levels can complete them, so as to achieve the goal of common progress. For example, in the lesson of learning the principle of counting, teachers should fully understand the differences of students'abilities, the ability to understand problems, set appropriate questions to facilitate students to understand the principle of counting, and teachers should formulate classroom exercises matching their abilities for students at different levels.

4.2. Refine hierarchical teaching, implement hierarchical teaching objectives

With the continuous advancement of the new curriculum reform, hierarchical teaching is one of the most popular educational methods at present.^[4] The implementation of hierarchical teaching objectives in course teaching can make teaching oriented to student groups, better deal with the differences between students, hierarchical and refined teaching objectives make learning more challenging and fun, and stimulate each student's interest in learning. Refined teaching objectives can also better take students as the theme, fully enhance each student's core mathematical literacy, so that students who can not learn at all levels can learn something.

4.3. Gradient stratified homework, accurate examination of learning status

The learning and review time of mathematics in secondary vocational school is limited, in order to achieve good teaching effect, we must seize the time after class, and arrange hierarchical homework with gradient in order to achieve the continuation of classroom teaching. According to the requirements of hierarchical teaching objectives, teachers can set homework as three levels: A, B and C, including basic questions, improvement questions and comprehensive questions. Students with weak foundation should master the basic questions related to the content of the textbook smoothly, help them understand the knowledge points learned in class, achieve the effect of consolidation, reduce negative emotions in learning, and enhance their self-confidence in learning. Middle-level students take the application practice of basic knowledge as their learning goal, focusing on improving the application ability of basic knowledge. Students with strong learning ability should pay attention to improving their innovative thinking and flexible ability while learning basic knowledge, so that they can have a deeper understanding and application of basic knowledge. For example, in the teaching of "quadratic inequality with one unknown", the strategy of hierarchical teaching is adopted, and three levels of questions are designed as follows:

Level A: Solve the following inequalities:

$$(1)x^2 - 4x + 5 > 0 \quad (2)6 - x^2 \geq x \quad (3) - x^2 - 2x + 15 \geq 0$$

Level B: calculate the value range of the independent variable x in the following functions:

$$(1)y = \sqrt{x^2 - 2} \quad (2)y = \frac{1}{\sqrt{x^2 + x - 6}} \quad (3)y = \sqrt{-x^2 - 2x - 1}$$

Level C: known inequality $kx^2 - 2x + 6k < 0$ ($k \neq 0$):

(1) If the solution set of the inequality is $\{x|x < -3 \text{ 或 } x > -2\}$, find the value of k ; (2) If the solution set of the inequality is the real number set \mathbb{R} , find the value of k .

Among the above three questions, Level a represents basic questions, which are generally not difficult, and most students can answer them by thinking; Level B represents comprehensive questions, which have certain flexibility; Level C represents improved questions, which are more difficult, and require students to have good mathematical thinking and summary ability. Three kinds of questions can give students at every level the opportunity to show themselves, and they will experience the hardship and joy of harvest in their study. Through hierarchical problems, students at all levels can fully participate in learning, inspire their thinking, improve their core mathematical literacy, and play an important role in hierarchical homework in teaching.

4.4. Differentiated hierarchical evaluation, accurate diagnosis of students' academic level

Scientific academic level evaluation is an important way to help students build self-confidence and help teachers improve teaching.^[5] Whether the evaluation is accurate or not directly affects teachers' judgment of students' learning situation and the development of follow-up teaching activities. Therefore, we set up differentiated hierarchical evaluation, which is more in line with the characteristics of secondary vocational students and fully affirms the learning and growth of each student. Referring to the level one in the mathematics curriculum standards of secondary vocational schools is the requirement of qualification and the level two is the requirement of selection and examination of higher vocational colleges, we should give full play to the advantages of hierarchical evaluation. Combined with the three levels of hierarchical homework, we can also evaluate students in three levels. For students with weak foundation, we should pay more attention to the change of their learning attitude, find out their progress, fully affirm and encourage them, give them the opportunity to show, stimulate their interest in learning, and make them meet the qualified requirements of the first level. For middle-level students, we should fully explore the points where their performance can be improved, grasp the weak links of their knowledge, guide them to set higher goals when evaluating, solve some challenging problems, and make their level further meet the requirements of the second level of higher vocational examination. For students with strong abilities, we should adhere to higher requirements when evaluating, maximize their level, explore their internal motivation for learning, and improve their innovative thinking ability.

5. Conclusion

The stage of mathematics classroom teaching in secondary vocational schools is very special, in which the individual differences of students are usually more obvious, which also makes the application of hierarchical teaching method more important. In the process of application, teachers should fully respect students' learning subject status, respect individual differences, adjust stratification and grouping in an obscure way, give more encouragement and support to students, and actively apply the means of stratification evaluation to give full play to the advantages of stratification teaching, so as to make the teaching of mathematics in secondary vocational schools more smoothly. Make students at all levels make progress on their own basis, and comprehensively improve students' core mathematical literacy.

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