

On the Application of Stratified Teaching in Junior Middle School Mathematics

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Abstract: *Based on the analysis of the problems in current mathematics teaching, this paper puts forward the teaching method of multi-level teaching, and illustrates the relationship between multi-level teaching and mathematics teaching, as well as the advantages of multi-level teaching. Examples are given to illustrate how to reasonably stratify and improve teaching efficiency in each link of stratified teaching. In the process of stratification, methods should be paid attention to to ensure the best effect of stratified teaching.*

Keywords: *multi-level teaching, learning efficiency, mathematics learning*

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I. Introduction

Mathematics is a subject that trains students' logical thinking. In traditional education and teaching, because of the pursuit of higher transition rate, the school sets the same standard for students, which leads to the unbalanced development of students in all aspects of learning ability and affects the teaching effect. Stratified teaching is a teaching method that can teach students according to their aptitude. During this process, students' subjectivity can be brought into play [1]. On the premise that teachers have a full understanding of students, they are scientifically and reasonably stratified, accurately arranged teaching objectives, teaching contents, teaching methods, etc., and also stratified one by one in the subsequent teaching links. Effectively promote the overall improvement of all students' mathematical ability.

II. Problems in the Teaching of Mathematics

(1) Stereotyped teaching methods, fail to teach students in accordance with their aptitude.

In the course of practice, I found that some mathematics teachers were influenced by new ideas and concepts in junior high school mathematics teaching. But in the real teaching process, the teaching behavior is not changed, and the traditional teaching method is still adopted. In short, the teaching concept emphasized by the new curriculum reform has not been implemented by teachers in the actual process of teaching. Some teachers still adopt the past spoon-feeding mathematics teaching method. This method not only can not realize stratified teaching, but also makes some students feel boring about mathematics learning, thus producing boredom, which leads to the teaching effect of mathematics classroom greatly reduced. If a variety of methods and layered teaching are used, the above problems will be effectively alleviated.

(2) Teaching methods are too simple to stimulate students' enthusiasm.

Through the summary of the lectures during the internship, it can be found that in the teaching process of junior high school mathematics, some teachers only pay attention to "speaking" and ignore "teaching". This results in the classroom becoming a classroom with teachers as the main body, and students have changed from the main body of the classroom to the object of passively receiving knowledge. The teacher propagated according to the content written in the lesson plan, and did not consider whether the students could accept the content. In terms of teaching methods, some teachers did not fully realize the important role of the principle of innovation, and the teaching process was boring, which caused students to lose the enthusiasm for learning mathematics. In the teaching of mathematics, teachers should give full attention to the subjectivity of students and start teaching with students as the center. Teachers should use different teaching methods to stimulate students' interest in learning.

(3) Ignoring the cultivation of students' divergent thinking, there is no level of homework after class.

To improve students' learning ability in junior high school mathematics, it is indeed necessary to complete a lot of exercises. Although it advocates burden reduction, it cannot be completely separated from math exercises. The purpose of assigning homework is not to increase the burden on students, but to consolidate the content learned in this lesson through after-class exercises, and to check for omissions. Let students master the basic knowledge learned in this lesson and learn to apply it through repeated exercises. However, the homework assigned by some teachers lacks hierarchy and is practiced for "practice". It is not good for students to master the corresponding problem-solving skills and methods through practice, and it is not conducive to the cultivation

of students' developmental thinking. Assigning homework hierarchically can meet the needs of students at all levels for homework, and better consolidate the knowledge they have learned to maximize the effect of homework.

III. Stratified teaching in the Teaching of Mathematics

3.1 The Concept of Stratified Teaching

Stratified teaching is to achieve different levels of teaching objectives, teachers in the intellectual, basic knowledge and non-intellectual aspects of the implementation of students, a targeted hierarchical teaching method [2]. This teaching method can not only make up for the shortcomings of traditional education methods, but also promote the development of all students.

The main characteristic of stratified teaching is that students are divided into groups according to the ability of each student, and teaching activities are carried out in groups. This teaching mode requires attention to the development of each student. According to the different characteristics of the students and the needs for personal development, differentiated mathematics teaching is carried out to the students. In the process of imparting mathematics knowledge to the students, teachers can help each student to develop in their own unique way to realize the maximum personal value of each student.

Mathematics has high requirements for students' logical thinking ability and abstract thinking ability. Therefore, this requires junior high school mathematics teachers to have a superb teaching level. Some common traditional methods are difficult to take into account to a certain extent, considering the basic knowledge level of students at different levels and the differences in learning attitude, which will damage the teaching effect. Stratified teaching emphasizes that all students participate in every link of the learning process as the main body of learning. Teachers should adopt teaching methods adapted to the development of students. Stratified teaching can pay attention to the learning situation of each student and promote the common development of students at different levels [3, 4]. Therefore, it is of great theoretical research value and teaching practice guidance value to explore how to use stratified teaching method reasonably in junior high school mathematics teaching process.

3.2 The Advantages of Stratified Teaching

(1) Stratified teaching helps to teach students according to their aptitude.

Recently, it has been pointed out that the development of students can be divided into two types, one is the current development level of students, and the other is the highest level that students can achieve through hard work. The area between these two levels is called the nearest Development zone [5]. In the process of mathematics teaching, teachers should pay attention to this part of each student, and build a bridge between the two knowledge levels for students, so that students can obtain faster and better development. Because different students have different recent development areas, under the traditional teaching model, teachers can only meet the knowledge needs of most students, and cannot choose a learning plan suitable for their own development for each student. The use of stratified teaching method can make up for this defect. Using the stratified teaching method, the teacher can divide the students into different groups according to the current learning ability and knowledge level of each student when teaching.

(2) Stratified teaching is beneficial to students' subjectivity.

In the traditional teaching mode, teachers often face two major problems, one is to raise the top students, the other is to make up for the weak students with learning difficulties. In order not to affect the teaching progress of most students, eugenics and students with learning difficulties can only be tutored after class. If we adopt the teaching mode of stratified teaching, we can set lower teaching objectives and choose easier teaching contents for students with learning difficulties. Help students with learning difficulties to overcome their fear of mathematics learning, obtain a sense of achievement in learning mathematics, and then carry out the next step to fill the gaps. For eugenics, we can properly raise the difficulty of teaching content, dig deeper knowledge, and make eugenics better development.

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(4) Stratified teaching is beneficial to the improvement of mathematics classroom efficiency.

In the traditional teaching process, we will find such a phenomenon in the mathematics classroom: a topic, a knowledge point, after many times, there will still be students who will not. The reason for this

phenomenon is that for students with high knowledge comprehension ability, they may have mastered the main points of knowledge in the first two times of teaching, and the later repetition has little effect on their learning. However, students who lack the ability to understand knowledge are tired of listening to lectures repeatedly and will not listen to lectures seriously. This phenomenon leads to a decrease in the efficiency of mathematics teaching. The hierarchical teaching mode can effectively reduce this phenomenon. For students who can understand the knowledge well, more challenging knowledge difficulties should be provided for these students, and the teaching speed can also be appropriately increased. For students with poor comprehension ability, different teaching models can be changed to meet the development needs of such students, and to improve the overall classroom teaching effect.

IV. How to Use the Stratified Teaching Method in Junior Middle School Mathematics Teaching

4.1 Stratification of Teaching Objectives

Students are all independently developed individuals, and there are certain gaps in the development level of different students in all aspects. These gaps are not only manifested in all aspects of student life, but also in the level of learning. Therefore, mathematics teachers are required to pay attention to teaching in accordance with their aptitude in the teaching process. Set different learning goals for students with different knowledge base and understanding ability. Let all students be able to participate in the learning process. Teachers should conduct thorough analysis and research on mathematics textbooks, master the outline of middle school mathematics textbooks, and develop learning goals for students of different levels based on the comprehension abilities and characteristics of students at different levels, so that students at all levels can achieve themselves Learning goals, and get corresponding improvement and development.

For example, when learning "addition and subtraction of rational numbers", teachers set different teaching goals for students at all levels according to their specific academic conditions. First of all, teachers should have an understanding of the knowledge base and comprehension abilities of different students, and after they have a full understanding of the students, they should be divided into different categories. For example, some students have strong mathematics comprehension abilities. We classify this type of students as Class A because they have strong learning motivation. Class B students have better math learning ability, but lack of learning motivation. Class C students' math learning ability and learning motivation are relatively average. Then, the teacher set three different learning goals. The first goal is to require students not only to master the laws of addition and subtraction of rational numbers, but also to be proficient in calculations. This is the minimum goal requirement. For A students, the requirements are too simple. But for class C students, this goal allows students to master the basic knowledge of mathematics and improve basic skills [6]. The second goal is to require students to use the knowledge learned in this lesson to solve practical problems in life on the basis of completing goal one, and to develop students' observation, conjecture and verification abilities. This goal is set for class B students. The purpose is to allow students to master the basic knowledge and improve themselves. The third goal is to allow students to experience the process of knowledge exploration by themselves and gain the experience of discovering knowledge. This goal is set for Class A students, allowing students to experience the joy of learning mathematics.

In the process of mathematics teaching, different teaching goals are set for students of different levels. Let every student participate in learning, gain motivation for learning, get a certain improvement, and promote the all-round development of all students.

4.2 Stratification of Teaching Content

The teaching methods used by teachers in the process of teaching instruction should also pay great attention to levels, and choose different teaching modes for students with different levels of knowledge and ability. Whether teachers can use appropriate teaching methods plays an extremely important role in whether students' interest in mathematics learning can increase day by day. Different teaching objects and teaching content require different teaching strategies, so as to reflect the pertinence and accuracy, and to enable students of different levels to make progress through learning.

For example, when teachers teach the section "Images and Properties of Quadratic Functions", first of all, all students should understand what a quadratic function is and what properties the quadratic function has. Then, teachers should choose the content suitable for them according to the level of understanding of students at all levels, and conduct targeted teaching activities for students at all levels. For example, for A-level students, on the basis of mastering the image and properties of quadratic functions, they must also learn to apply them and master the methods of learning function knowledge, which is very important. For B-level students, a cooperative inquiry method should be adopted. According to the students' learning ability at this stage, corresponding questions were raised, and students were asked to discuss in groups, which cultivated students' sense of cooperation. In the process of question discussion, teachers as participants answer questions for each group, comment on the discussion results of each group, and encourage students to continue their efforts. For C-level

students, the teaching method is most suitable. Because the basic knowledge and comprehension abilities of this kind of students are weaker than those of the first two kinds of students, they are suitable to complete the learning tasks under the guidance of the teacher, and then consolidate their knowledge of quadratic functions through specific connections, and master the drawing of quadratic functions. Method and understand its nature. Due to the weaker learning ability of such students, teachers should pay more attention to them in the teaching process. For the teacher's question, the answer is given through the hands-on operation, so that the students can leave a deep impression and achieve a better teaching effect.

For students with different levels of mathematics knowledge and ability, different incentive models and teaching models can be selected in the process of mathematics teaching. For students with learning difficulties, in teaching methods, we should create multiple situations and arouse students' enthusiasm and initiative in learning. By adopting the method of group competition to motivate students, the students with similar levels are divided into different group competitions to stimulate students' learning motivation. For top students, teachers should teach more learning methods to top students, give students more autonomy in learning, set up the consciousness of inquiry learning, and give full play to students' initiative and initiative. Teachers can also guide students to form help groups, top students with secondary students, underachievers. In group learning, through contact with top students, we can understand their thinking mode and habits, learn from effective experience, and promote their mathematics learning ability to improve gradually.

4.3 Stratification of Evaluation Model

Evaluation is still very important in the teaching process. Teaching evaluation is a way to evaluate the teaching process and results. Teaching evaluation judges the value of teachers' teaching and students' learning, and then points out the direction of follow-up teaching [6]. Teaching evaluation stratification means that teachers choose different evaluation standards and evaluation methods according to different students. This can take care of the emotions of students at different levels of development and is conducive to the development of students.

For example, when teaching "one-time function". For students with strong knowledge understanding, good learning attitude, and excellent academic performance, not only must they affirm and praise their outstanding learning achievements, but also consciously guide them to recognize their own shortcomings and there is room for improvement. While praising students for maintaining interest and self-confidence, it is more important to focus on their defects in mathematics learning and encourage students to delve into deeper and more difficult topics. When students who don't like to speak usually raise their hands to answer questions, even if the answer is not perfect, the teacher must give it affirmation. For students with unsatisfactory academic performance, more attention should be paid to the little progress they have made and changes in their learning attitudes, to praise their progress in a timely manner, to give guidance to students' difficulties, and to let students experience It will be rewarded for what I have paid, thus creating a virtuous circle.

In short, hierarchical evaluation runs through the entire process of students' learning, and this "differential treatment" is a manifestation of respect for students' differences. Teachers should have a comprehensive understanding of students, and according to the learning situation of each student, regularly make learning diagnosis of students' learning, and formulate a unique learning plan suitable for each student.

4.4 Stratification of Homework Assignment

The homework not only consolidates the basic knowledge the students have learned, but also reflects the effect of classroom teaching. In order to enable students at all levels to master the basic knowledge they have learned, layered design assignments have become a necessary choice. Assigning homework hierarchically can not only meet the needs of students at all levels for homework, but also enable students at all levels to develop their mathematical thinking and abilities reasonably, so that the conflicts between students at different levels due to the difficulty of homework are effectively ease.

When assigning homework, teachers can design a multi-solution exercises, exploratory exercises and applied exercises for such students. Through this kind of exercises, students can broaden their thinking and feel that they have no end to learning and have a further pursuit of mathematics.

Designing different levels of homework for students can adapt to the needs of students at different levels for the difficulty of homework, better complete the selected homework, can stimulate students' enthusiasm for learning, mobilize students' enthusiasm for learning, and let students experience their own Paying is rewarding, enhancing learning interest, thereby promoting the sustainable development of students [7].

4.5 Stratification of Test Questions

Examination is used as a means to verify what problems students have in the learning process, and it can also measure the teaching effect of teachers. In the field of modern teaching in our country, examination-oriented education occupies a mainstream position, and examinations are particularly important. But in the

examination process, teachers often use a unified test paper and the same standard to test students. This will not only cause some students to lose their confidence in learning, but also make other students too conceited because of their good grades. Therefore, teachers need to conduct a comprehensive investigation of the actual ability of each student before the exam, and classify the students. Then design layered test papers for students in a targeted manner, set test papers of different difficulty for students of all levels, and construct different scoring standards.

V. Thoughts on Stratified Teaching

Stratified teaching can improve teaching quality and develop students' personality. However, in the process of implementing hierarchical teaching, if you can't grasp the reasonable stratification of students, reasonably design teaching goals, arrange teaching content, and conduct teaching evaluations, the guys of stratified teaching will be greatly reduced [8]. Therefore, in the process of stratified teaching, teachers should consider the following issues: First, when implementing stratified teaching, students need to be guided correctly so that students have a correct understanding of hierarchical teaching. Otherwise, it will cause some top students to feel complacent, and less advanced students will easily lose confidence in learning, which will have a strong negative effect. Second, the level of students cannot be divided by their test scores once or twice. When classifying students, it is necessary to fully listen to the suggestions of teachers and parents of each subject, and comprehensively inspect the various aspects of students' abilities, so as to achieve scientific stratification. Third, in addition to stratification in each link of the teaching process, different evaluations should also be given according to the characteristics of students in tests and evaluations.

VI. Conclusion

In short, students have different mathematics learning abilities, life experiences and personalities. In the process of mathematics teaching, if you blindly instill the same teaching concepts and teaching strategies, it will inevitably affect the enthusiasm of some students for mathematics learning and the enthusiasm for exploring problems. Therefore, the introduction of hierarchical teaching methods can achieve targeted teaching and thus achieve corresponding teaching requirements. Hierarchical teaching is the most effective way to improve teaching efficiency in the middle school mathematics teaching process. Hierarchical teaching should run through the teaching process of junior high school mathematics and even other subjects. This can not only effectively achieve the teaching goals, but also help students improve their learning ability.

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