

# Strategies for Constructing Efficient Mathematics Classroom in Junior Middle School

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## ABSTRACT

In order to solve the problems existing in the current middle school mathematics classroom teaching process based on teacher-centered teaching mode, the student-centered teaching mode is used as an important measure for many mathematics educators to improve the efficient teaching of mathematics in junior middle schools. Taught by the same teacher, after 2 months, the average score of the class A based on student-centered teaching mode is 2.3 points higher than the average score of the class B based on teacher-centered teaching mode. Considering that the two classes are the same type and in the beginning of the experiment, the class A is 0.5 points lower than the class B, student-centered teaching mode has positively affected the mathematics learning of students in junior high school.

**Keywords:** core literacy, Junior high school mathematics, Efficient classroom

## 1. INTRODUCTION

Learning is not only an inevitable requirement for examination, admission and employment, but also a process for students to improve their own quality and discover their potential. Under the continuous reform of the new curriculum standard, the disadvantages of teacher-centered teaching mode gradually appear, and the mode of guiding students to develop mathematical thinking and actively explore mathematical knowledge gradually comes to the eyes of educators.

Nowadays, classroom teaching is no longer just a passive imparting of teachers' theoretical knowledge, but a platform for students to independently explore and consciously learn as the main body of classroom learning. The student-centered teaching mode has become an important measure for many mathematics educators to improve the efficient teaching of mathematics in junior middle schools[1].

In junior middle school mathematics teaching, teachers not only need to enhance students' various ability levels, but also need to develop their core literacy, which means that teachers should build efficient mathematics classroom[2].

## 2. PROBLEMS EXISTING IN THE CURRENT MIDDLE SCHOOL MATHEMATICS CLASSROOM TEACHING PROCESS

### 2.1. Selecting a Template

The teacher-centered teaching concept of junior middle school mathematics has existed for a long time. When quality education has not been widely proposed, the teacher-centered concept of mathematics teaching in junior middle school has lasted for many years. It is difficult for schools and teachers to change this old teaching concept in a short time. Moreover, in the teacher-centered teaching process, there is no lack of excellent students and good scores, which leads to the school and teachers have more confidence in their years of teaching experience and adhere to their own teaching concepts. It is undeniable that the teacher-themed teaching model has indeed achieved some achievements, but with the development of quality education, compared with the teacher-centered teaching concept, the former has more prominent teaching effects and is more suitable for the development of junior high school students' mathematical thinking.

### 2.2. The Teaching Process Lacks Guidance for Students' Divergent Thinking

Divergent thinking can help junior high school students to solve mathematical problems from many different directions and improve their exploration and research spirit.

of mathematical knowledge. And the current junior high school mathematics teaching lack of junior high school students in mathematics thinking guidance, "indoctrination" classroom teaching teachers teach what students learn what, do not know how to start the brain, let alone the guidance of divergent thinking in mathematics? Junior middle school is the key growth stage of students' mental development, but also the key period for the cultivation of divergent thinking. There is no good guidance for mathematical thinking in junior middle school mathematics class, which leads to the weak application ability of junior middle school students' mathematical knowledge, which is not in line with the teaching objectives and student development[3].

### ***2.3. Teaching Methods are Not Innovative Enough and Individual Differences of Students are Ignored***

There are no same two leaves in the world, and the individual differences between students are even more obvious, which can be seen in junior middle school mathematics classroom teaching. It cannot be denied that some junior middle school students have a certain talent in mathematics, some students rely on their own efforts to improve their grades, and some students are less qualified. If targeted innovative teaching methods are not adopted in mathematics classroom and individual differences of students are ignored, students with good grades may stagnate and students with learning difficulties cannot learn. The popularity of information technology is also an innovation of mathematics teaching method. Using it in classroom teaching can greatly improve the enthusiasm of students and launch mathematics teaching for the students' main body.

## **3. CONSTRUCTION OF HIGH EFFICIENCY MATHEMATICS CLASSROOM IN JUNIOR MIDDLE SCHOOL**

### ***3.1. Cultivate Students' Awareness of Problems Based on Practical Life***

The actual teaching activities of junior middle school mathematics are obviously closely related to the actual life. In the teaching process, teachers should fully understand the close relationship between mathematical knowledge and real life, and explain some teaching cases related to real life after understanding. This can not only strengthen students' interest in learning, but also guide students to think at the same time, so that students can discover and put forward problems in life, so as to strengthen the cultivation of students' mathematical abstract thinking

ability and operation ability. At the same time, the life content chosen by teachers should also have a clear structure, and their knowledge should follow the principle of from the easy to the deep. In this way, students' attention can be attracted, so as to strengthen the good interaction between students and teachers and promote the improvement of students' math learning ability under the active questioning of students.

For example, when teachers teach the quadratic Equation of one Yuan in the first volume of the third grade, they can choose a case that fits with the reality of students' life, and then take this case as the starting point to trigger students' thinking. For example, Xiao Ming's mother deposits 5,000 yuan in the bank on a regular basis for one year. After one year, she withdraws 2,000 yuan at the same interest rate, and the remaining money and interest continue to be deposited at the previous interest rate. At the same interest rate, I ended up withdrawing \$3,320 with interest. What's the annual interest rate for the account, please? After putting forward such a question, the teacher should guide the students step by step to let the students think and analyze the problem, so that they can clear the idea of solving the problem, and carry out reasonable operation on the final result[4].

### ***3.2. Introduce Situation Creation Teaching***

In the teaching process, teachers should create relevant situations to attract students' attention with life-like scenes, stimulate students' interest in learning with scenes, and enable students to complete teaching tasks and learn relevant knowledge in the scenes.

For example, when teaching "practical problems and quadratic equations of one yuan", teachers can create a situation of "shopping malls selling refrigerators" according to the common questions of quadratic equations of one yuan: "When the price of type A refrigerator is A yuan, a refrigerator can be sold every day, and when the price is reduced by B yuan, more B refrigerators can be sold every day; If the price of type B refrigerator is C yuan, C refrigerator can be sold every day, and if the price decreases by D yuan, D refrigerator can be sold every day." So the students can solve the sales methods to achieve specific business goals. In addition, teachers can flexibly use this model to train students' skills of extracting information and building models, and improve their mastery of question types.

However, sometimes the situation created by teachers neglects the overall structure perception and comprehensive training, and only creates relevant knowledge points for training. If teachers ignore part of knowledge points in the creation situation, students will also ignore the learning and mastering of this part of knowledge points. Therefore, teachers should arrange the content of situation creation reasonably, and set up the key and difficult knowledge reasonably[5].

### 3.3. Encourage Students to Work in Groups

Group cooperative learning is a common teaching method. Its advantage is that it can create a good classroom teaching atmosphere, so that students can communicate and discuss in a free atmosphere, find and solve some learning problems, and improve students' participation and sense of participation. At the same time, group cooperative learning also helps teachers to teach students according to their aptitude and motivate students to study independently.

As in the teaching of "secondary radical, and add and subtract", for the use of the minimalist secondary radical, determining if a secondary radical the minimalist secondary radical and so on important and difficult, a lot of foundation is poor or not listening in class the students can't master in the lectures, and in group discussions, master degree is high for other students answer doubts, correct it[6].

## 4. EXPERIMENT

### 4.1. Experimental Environment

In order to verify the effectiveness of student-centered mode in mathematics classroom in junior high school proposed in this paper, two classes, the same type, in a junior high school were selected for a 2-month experiment. The two classes selected for the experiment were two classes with similar average level of students taught by the same mathematics teacher.

### 4.2. Experimental Process

This experiment first carried out a mathematics test for two classes. After the test, test papers of the students of two classes were randomly sorted, and another teacher who did not teach the two classes graded all the test papers so as to ensure fairness score statistics. In the case of full marks for 120 points, the average point of A class of mathematics was 100.6 points, the average point of B class was 101.1 points, 0.5 points ahead. Then, student-centered teaching mode proposed in this paper is adopted for Class A, and teacher-centered teaching mode is adopted for Class B.

The same teacher of Class A and Class B began to adopt different teaching modes and progress for the two classes. The teaching lasted for two months.

After two months of teaching, the two classes were tested again. This test used the same method as the first test and used the same teacher to grade test papers to ensure fairness. According to the statistics, the average score of Class A is 103.8 and that of Class B is 101.5.

### 4.3. Analysis of Experimental Result

The experimental result shows that among the two classes with 0.5 points difference in average scores of the first

mathematics test taught by the same teacher, the average score of the class using student-centered teaching mode proposed in this paper is 3.2 points higher than that of the first test in the mathematics test two months later. The class that was taught by teacher-centered teaching mode scored an average of 0.4 points higher than the first test. It can be seen that the average score of the class using student-centered teaching mode proposed in this paper is 2.8 points higher than that of the class taught by teacher-centered teaching mode. At the same time, it can be calculated that the improvement score of the class using student-centered teaching mode proposed in this paper is 2.4 points higher than that of the class using teacher-centered teaching mode. Therefore, it can be proved that student-centered teaching mode of junior high school mathematics teaching proposed in this paper can help students improve the learning effects of junior high school mathematics in class.

## 5. CONCLUSION

In a word, in junior middle school mathematics teaching class, teachers should pay attention to the development of students' core literacy, and should carry out teaching from the perspective of core literacy. In this regard, as junior middle school mathematics teachers, we should make full use of all kinds of advanced information equipment, to create a good teaching situation, and develop their information literacy and other literacy in the training of their problem awareness and inquiry ability. In this way, we can promote the development of students' mathematical abilities such as mathematical abstraction and logical reasoning, and achieve the comprehensive construction of efficient mathematics teaching class in the enhancement of students' mathematical literacy.

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