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# Research on the Generation Strategy of High School Mathematics Teaching Mode Based on the Concept of "Semi-Flipped Classroom"

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**Abstract** – With the continuous implementation of the new curriculum reform in senior high school, teachers' pay more and more attention to how to choose appropriate teaching ideas for teaching. At the same time, with the continuous development of modern education technology, the teaching concept of "flipped classroom", as a teaching practice paradigm of deep integration of modern education technology and education, has gradually entered the attention of high school teachers. In the teaching process, combining the characteristics of high school mathematics teaching process and considering many factors, such as hardware implementation and teacher quality, it is very challenging to implement flipped classroom in a real sense. Therefore, as a transition, the concept of semi-flipped classroom education is a practical choice worthy of every high school teacher's deep consideration and trial. Starting from the teaching concept of semi-flipped classroom, this paper deeply analyzes its internal connection and degree of correspondence with high school mathematics teaching, proposes the implementation plan of the teaching mode of semi-flipped classroom, and provides reference for the localization creation of semi-flipped classroom.

**Keywords** – Emi-Flipped Classroom, High School, Math, Micro Video, Education.

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## I. THE INTRODUCTION

With the deepening of globalization and the continuous development of science and technology, the traditional teaching model is obviously no longer able to meet the current needs of talent training. In the teaching of high school mathematics, teachers are trying to find out how to improve the teaching mode and improve the teaching quality in the context of the big data era in order to meet the pace of The Times<sup>[1]</sup>. The teaching concept of the semi-flipped classroom is undoubtedly a ray of light in the teaching reform. It can not only perfectly integrate modern educational technology with teaching work, but also establish a relaxed and efficient mathematics learning classroom for students, so that students can enjoy mathematics and learn it well.

## II. THE PROBLEMS EXISTING IN HIGH SCHOOL MATHEMATICS TEACHING

### A. Lack of Interest Stimulation for Students

After go to high school, math courses enhanced abstractness, but suffers from occupational fatigue or limit the practical factors such as teaching progress, in the actual teaching process, teachers still follow scripted, theoretical infusion or exams tactics such as teaching mode, the student's main body status was weakened, this is also a lot of students tired of mathematics, mathematics knowledge to understand the main reason of boring<sup>[2]</sup>.

### B. Overemphasize the Leading Role of Teachers in the Teaching Process

The teaching concept, curriculum concept and evaluation concept formed by teachers in their long-term teaching experience cannot be fully integrated with the new teaching concept if they cannot keep up with the pace of the new curriculum reform. If teachers overemphasize outdated teaching concepts in the teaching process, it

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will hinder the development of students. Therefore, in the actual teaching process, teachers still dominate the classroom, which will not only hinder the actual reform process of the new curriculum reform, but also restrict the improvement of students' innovation ability and the cultivation of divergent thinking.

### *C. Students Lack Good Study Habits and Methods*

After the implementation of the new curriculum reform, teachers gradually cultivate students' independent learning ability. However, under the influence of the college entrance examination, the teaching of high school mathematics is still dominated by "cramming" education. In class, the explanation of knowledge points is supplemented by exercises as the main form of new teaching. After class, the new knowledge is consolidated through a large number of exercises, and a large number of exercise books and "flying" papers become the main "companions" of students in their spare time. This teaching method ignores students' subjective initiative, and students are also facing the danger of becoming "learning machines". Therefore, the promising new curriculum reform will also become the "victim" of examination-oriented education. At the same time, students cannot integrate and apply knowledge, which will greatly reduce the learning effect of students.

## **III. RESEARCH ON THE NECESSITY OF INTRODUCING THE TEACHING CONCEPT OF SEMI-FLIPPED CLASSROOM INTO THE MATHEMATICS TEACHING IN SENIOR HIGH SCHOOL**

The "half" in the half flipped classroom mainly means to find a new balance between the traditional mathematics teaching mode and the flipped classroom and realize it. While improving the teaching method, it avoids the situation that the effect is not obvious due to students' weak initiative, so as to maximize the benefit. To put it simply, the essence of the semi-flipped classroom is a hybrid teaching model<sup>[3]</sup>. The micro-video that students watch before class is put into the classroom as part of the teaching content and integrated with students' thinking and discussion and teachers' guidance, so as to build a relaxed and efficient modern mathematics classroom.

### *A. Enhance Students' Learning Interest, Cultivate their Independent Learning Ability and Innovative Thinking*

In the actual teaching, teachers fail to "teach students in accordance of their aptitude" in the real sense, and students do not have the opportunity to fully elaborate their views in class, which will lead to students' inability to effectively improve in the limited learning time<sup>[4]</sup>. Under the teaching concept of semi-flipped classroom, students can fully communicate and communicate with teachers, and can elaborate all their views in the process of mathematics learning and get timely feedback, so as to shorten the distance between teachers and students. In addition, the most suitable learning content will be taught to students with the best teaching method, and more opportunities of independent exploration will be provided for students, which can stimulate students' learning interest in the process of exploring the mathematical world, and cultivate students' independent exploration ability and innovative consciousness<sup>[5]</sup>.

### *B. Establish the Subject Status of Students and Achieve the Role Exchange of Classroom Teachers and Students*

In the process of the new curriculum reform, teachers need to transform the traditional teaching mode, so that students occupy the dominant position in the classroom, and students become the master of the mathematics

classroom<sup>[6]</sup>. A half turn to convert math class students of teachers in the class, the teacher taught by the original knowledge into the students' learning process, students can also according to their own needs to choose the appropriate teaching methods and learning content, learning his thoughts, it needs, let the students become the study master.

### *C. It Can Effectively Improve the Efficiency of Mathematics Classroom Teaching and Sublimate the Teaching Effect*

On the premise of fully respecting students' learning willingness and providing suitable learning contents for students, the semi-flipped classroom can break through the shackle of traditional teaching methods and deliver mathematical knowledge to students with micro video, a novel teaching method, as the core. In addition, it can greatly shorten the time to understand the basic situation of students in the teaching process and improve the teaching efficiency of the class<sup>[7]</sup>. The concept of semi-flipped classroom also caters to the intelligence level of students, reshapes the simple mathematical teaching process with modern educational means, enlivens the classroom atmosphere, and enables students to participate in the learning process, independently explore the mathematical world and experience the beauty of mathematics.

### *D. Let Students Experience the Mathematical Culture through the Deep Integration of Mathematics and Information Technology*

Under the guidance of the teaching concept of semi-flipped classroom, teachers can transform the mathematics culture in the form of curriculum into the mathematics culture in the form of education that can be accepted by students. Through micro video replay history confusion in the development of mathematics knowledge and interpretation of mathematical propositions related the story of a mathematician, lets the student can in the process of mathematics study experience mathematics knowledge of cultural background, feeling the culture infection from mathematics, implementation, mathematics to teach students not only knowledge, and culture in mathematics<sup>[8]</sup>.

## **IV. APPLICATION STRATEGY OF THE CONCEPT OF SEMI-FLIPPED CLASSROOM IN HIGH SCHOOL MATHEMATICS TEACHING**

### *A. Preparation before Class*

Different from the traditional mathematics teaching model, in the preparation for the semi-flipped classroom, teachers need to make micro-video in advance for the students to watch the abstract and difficult content in the course content or the mathematics history that needs to be introduced on the basis of the necessary analysis of the teaching materials and students' situation. In the course of "determination of straight line and plane verticality", the introduction part of the class is firstly made into micro video to stimulate students' interest. In addition, in this class, the determination theorem for the verticality of a straight line and a plane is to guide students to explore the problem of "how to stand a triangle piece of paper upright on the desktop", and then give the relevant theorems. Then, teachers can make the demonstration process of this inquiry activity into micro video, so that students can watch it in class and improve teaching efficiency.

### *B. Classroom Teaching*

The main teaching process of the semi-flipped classroom can be summarized as "watching video -- student discussion -- teacher explanation -- student self-evaluation in class". Taking the course "determination of vertical line and plane" as an example, after the introduction of video broadcasting, the teacher should guide the students to sum up the definition of vertical line and plane and diverges the students' thinking. At the same time, after students watch the micro-video in the process of inquiry, it should be properly combined with the group teaching mode to arouse students' discussion on the essence of judgment theorem. After students publish the discussion results of each group, the teacher should give evaluation in time and correct the mistakes at the same time. At the same time, the teacher's explanation should be grasped from a macro perspective, so as to trigger students' recall and reflection on video content, and guide students to explore how to apply the line and plane judgment theorem.

## V. PRECAUTIONS FOR THE APPLICATION OF THE FLIPPED CLASSROOM TEACHING CONCEPT IN THE TEACHING PROCESS OF HIGH SCHOOL MATHEMATICS

### A. *Pay Attention to the Density of Curriculum Arrangement and Avoid Excessive Dependence*

In the process of applying the teaching concept of semi-flipped classroom, the first thing we should pay attention to is how to grasp the frequency of application in the teaching process. In the teaching process, the concept of semi-flipped classroom should be organically combined with group teaching and other modes. Meanwhile, attention should be paid to the connection of each teaching link in the semi-flipped classroom to avoid the decline of students' attention due to the long time of micro-video. In addition, teachers should ensure the practicality of micro video, and transform abstract and difficult knowledge points in mathematics into content acceptable to students through micro video, so as to improve teaching quality.

### B. *Guide Students to Correctly Participate in the Semi-Flipped Classroom and Avoid the Side Effects Caused by the Application of Informatization*

High school students generally have poor self-control and are easily attracted by things other than study. Therefore, in the application process of the teaching concept of the semi-flipped classroom, teachers should, on the basis of stimulating students' interest in the application of information technology means, grasp the degree of the use of micro-video and other teaching means, so as not to let students waste their attention in useless places, but fail to achieve the expected teaching effect. In the process of independent inquiry, after-class extension and expansion, teachers should avoid the side effects brought by teaching methods such as micro video, and enable students to learn what they want to learn in the semi-flipped classroom. More importantly, they should learn what they should learn.

## VI. CONCLUSION

In a word, under the guidance of the teaching concept of semi-flipped classroom, the high school mathematics classroom can increase the interaction between teachers and students in the teaching process while enabling students to control the classroom by themselves. The key to the application of the teaching concept of the semi-flipped classroom is to guide students to explore by means of modern educational technology such as micro-video, stimulate students' learning interest, and create a relaxed and efficient mathematics learning classroom. Therefore, under the circumstances of new curriculum reform deepening, mathematics teachers should constantly analyze the half turn classroom teaching idea as the starting point, catering to the characteristics of the era of big data,

introduce the artificial intelligent modern education technology more mathematics classroom, to improve the traditional mathematical teaching model, lets the student really to become host of the mathematics classroom, let each student to obtain different mathematical education, every student can get good mathematics education.

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