

Research on the Application of Micro-Lesson in Mathematics Teaching

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Abstract – Driven by the educational reform, the teaching methods have been improved and the teaching model has been optimized. The development and implementation of mathematics teaching work is of great significance to the cultivation and mobilization of students' mathematical ability. The traditional teaching mode is difficult to reasonably realize the current students' demand for mathematical knowledge learning, so the optimization of teaching mode in mathematics teaching work is imperative. This paper makes a systematic analysis of the application of micro-lessons in mathematics teaching, analyzes the characteristics, construction principles and applications, application value, influencing factors and development strategies of micro-lessons, and explores the methods to improve the quality of mathematics teaching by using micro-lessons.

Keywords – Mathematical Educations, Micro-Lesson, Mathematical Quality, Principle Of Building, Mathematical Learning Strategy.

I. INTRODUCTION

Micro-lesson, according to the needs of teaching practice, takes teaching videos as the main carrier and mainly includes various teaching resources for teachers to carry out teaching and learning activities on a certain knowledge point or teaching link in the teaching process [1].

The core content of micro class is the classroom teaching video, which is to show some key or difficult knowledge in the textbook in the form of video, and guide students to find and analyze problems through teachers' teaching, and find ways to solve problems. Essentially, the lesson is a new kind of carefully designed teaching activities, is a form of students' autonomous learning, students need to have the learning initiative and enthusiasm, to ensure that the classroom teaching efficiency, micro class based on students as the main body of teaching activity, from the perspective of students embodies mainly students an advanced teaching concept [2-5].

II. RESEARCH ON THE CONSTRUCTION PRINCIPLE AND APPLICATION OF MICRO LESSON

2.1. The Characteristics of Micro Class

As a new teaching mode, micro-class is greatly different from the traditional classroom teaching mode. Micro-class cannot be simply regarded as the condensed version of the traditional classroom, nor can it simply be regarded as the teaching segment of the classroom. Micro lesson is neither the compressed version nor the deleted version of traditional classroom, but a kind of micro lesson with rich content and clear subject, which plays an important positive role in promoting the improvement of classroom teaching efficiency and the development of education and teaching. It mainly has the following characteristics [6].

- (1) The video of micro class is short, versatile and easy to spread. Micro course video time is short, small capacity, content mostly selected from the important knowledge points and the students in a class is difficult to understand the knowledge, or difficult to plays an important role in the education teaching the

teaching links, performed by the subject teacher or by a number of disciplines teachers cooperative design is completed, that there was a course also needs the help of a professional information technology personnel. In this way, micro-course videos can not only be played in class, but also be watched anytime and anywhere by computers, tablets, mobile phones and other information technology terminals, which can meet the personalized learning needs of contemporary students.

- (2) The theme of the micro class is prominent and highly targeted. Micro class topics are small, but the outstanding theme, before production, producers will generally choose one to two point and analyze the knowledge points, choose suitable for students to learn the proper interpretation of the Angle, and enables the micro lesson to outstanding theme, focus on problems, the problems existing in the process of students' learning of the targeted solution, on the student studies targeted at once, Improve learning efficiency.
- (3) The structure of micro lesson is open, easy to generate and flexible. In micro course before production, design, teaching content, choice of knowledge points, teaching courseware practice these conserve resources, such as need through the interaction between teachers and students in teaching activities, feedback means such as communication, but after these fixed resources combined with micro course, introduced in the form of video class, makes the teaching structure is no longer a single, presents the development trend of diversification. After that, each micro-course is continuously expanded, modified and improved by means of mutual communication and reference among teachers, and finally a micro-course teaching system combining video and textbook teaching content is formed.

2.2. Principles for the Construction of Micro Courses

The main purpose of micro courses is to present key and difficult knowledge in the form of short videos, so as to provide convenient and diversified learning methods for learners. The construction of micro courses can follow the following principles.

- (1) The most significant difference between micro classroom and other classes is the feature of "micro". We should pay attention to micro principle when designing the teaching mode of micro class. Teachers should refine the classroom content and divide it into learning objects with only one knowledge point to make it easier for students to master knowledge points and give them a sense of achievement. The teaching content usually takes about ten minutes. Therefore, the class content chosen by the teacher must be brief, which is more suitable for students to concentrate on learning. If the time is too long, the efficiency of students' learning will be reduced. In addition, micro classroom should attach importance to the connection between knowledge points while separating knowledge points independently, so as to strengthen learners' comprehensive grasp of knowledge [7].
- (2) The design of micro courses should follow the principle of practicality. Micro courses provide help for learners. In the design of micro courses, learners should focus on their learning content and help them solve some related problems encountered in learning, so that learners can fully feel the practical significance and important role of micro courses. Micro-courses can add life examples appropriately, enabling learners to discuss problems through actual situations. This can not only attract learners' attention, but also stimulate their interest in learning and maintain their motivation. The micro course not only helps students solve some practical problems, but also improves students' learning autonomy and enables students to better und-

-erstand and apply the content they have learned.

- (3) The design of micro courses should be student-centered. The purpose of micro-course is to help students learn better, and students' learning experience and evaluation should be taken as the standard to measure the effect of micro-course. The design process of micro courses should be learner-centered in the selection of learning content, the design of learning activities and the organization of various learning resources. Therefore, when selecting the learning content of micro-course, it should be based on cultivating students' ability and determining the learning needs of learners. In the organization of learning resources, learners should be taken as the main body, their enthusiasm and initiative should be improved, their independent learning ability should be cultivated, and their interest in learning should be improved. In addition, the design mode of micro-course should change the traditional teacher-led teaching mode, establish a student-centered learning mode, and make reasonable design according to students' knowledge learning and understanding degree [8].
- (4) The design of micro course should follow the principle of interactivity and strengthen the application of graphics while applying text. Research shows that in the teaching process, if the teacher only blindly through words to explain the content of learning, then students will feel boring, easy to produce weariness. If the teacher can properly use the text and graphics in teaching, it can improve the teaching effect to a certain extent and be more conducive to students' learning and content mastery. In addition, the application of situational teaching in micro-courses can enable students to better learn knowledge through interaction with them. The teaching of micro-course takes students as the subject of learning, enabling students to discover and solve problems in learning by themselves, which also reflects the interaction of micro-course in a sense. The interactive principle of micro-course enables students to fully participate in learning and improve their autonomy and interest in learning.

2.3. The Significance of Micro-Lesson Application in Mathematics Teaching

- (1) The application of micro lesson in mathematics teaching is beneficial to the teaching of mathematics learning strategy.

Mathematics learning strategy teaching is the result of the combination of learning strategy teaching and specific subject teaching, that is, the application of learning strategy teaching in specific subject teaching. Some studies have proposed that mathematics learning strategy teaching is a teaching mode of analyzing, dealing with and solving mathematical problems gradually formed by students in the process of teachers' mathematics teaching and students' mathematics learning. It is formed in long-term teaching, combined with specific subjects, needs to be gradually improved, self-development, is any teaching behavior there is a strategy teaching. On the one hand, the same learning strategy has different forms of expression under different concepts in different disciplines. The concept of micro-course has changed the way of mathematics learning, making the teaching method of mathematics learning strategy more rich and flexible. On the other hand, the mathematics learning strategy under the concept of micro-curriculum has different effects on different learning segments, and different degrees of influence on each learning segment [9].

In specific teaching to mathematics learning strategy and the mathematics study content and micro curriculum, the combination of micro course under the concept of mathematics learning strategy instruction is in

the process of learning, using a variety of presentation of the course, let the students to learn mathematics learning strategy application, enable students to high efficiency and solve the problem, the method of subject learning task.

(2) The application of micro lesson in mathematics is beneficial to cultivate students' reverse thinking ability.

Micro-class teaching provides a new way for the cultivation of reverse thinking ability. Reverse thinking plays an important role in the development of students from concrete image thinking to abstract logical thinking. Mathematics learning, in addition to knowledge learning, is more important to cultivate students' thinking, however, the training of thinking ability is not achieved overnight, need to be constantly permeated and trained in teaching. The cultivation of reverse thinking is also like this. The application of reverse thinking in mathematics is very much. The inverse use of definitions, formulas and theorems, the inverse operation of various mathematical operations, the method of proof by contradiction, taking counterexamples, and the analysis of geometric proof all require reverse thinking, and are also important learning materials for the cultivation of reverse thinking. In mathematics teaching, the use of micro-lesson teaching can systematically cultivate students' reverse thinking ability. Through the micro-course design, the knowledge related to reverse thinking is classified and sorted, and the relevant teaching is carried out according to the characteristics of different knowledge, so that students can learn easily and quickly by using various Internet devices, providing a new way of learning.

The teaching method of micro class provides the possibility for students to cultivate the ability of reverse thinking for a long time. The cultivation of reverse thinking ability needs to be cultivated in the process of long-term continuous learning, long grasp and unremitting, and teachers need to always arrange teaching plans for the cultivation of reverse thinking ability in the teaching process. However, due to the arrangement of teaching tasks in actual learning, it is difficult for teachers to cultivate students' reverse thinking ability from the beginning to the end of the teaching, and the use of micro-lesson teaching means can achieve long-term cultivation of students' reverse thinking ability. Micro-lesson teaching is presented to students in the form of video, which is short in time and simple in content. It can be played on mobile devices only. It can be carried out before, after, during and during holidays anytime and anywhere.

In a word, micro-lesson is helpful to the teaching of mathematics learning strategies in mathematics teaching and has a lasting effect on cultivating students' reverse thinking.

2.4. The Making Way of Micro Lesson in Mathematics Teaching

Generally speaking, to create an excellent micro lesson in mathematics teaching, first of all, we should ensure that the theme of the micro lesson is clear and students can understand it. Secondly, the picture quality should be clear, the sound should be clear and relatively exquisite PPT. At the same time, we also need to have highly targeted teaching content and highly generalized ending. Therefore, when making micro-lessons, teachers can choose to make different micro-lessons according to students' preferences and school resources. There are several common ways of making micro-lessons.

(1) Using PPT to record screen, teachers can make PPT first and record in a quiet environment. When recording, we should pay attention to the clear picture and sound as well as the exquisite PPT and animation. This requires higher application of multimedia office software for teachers, and also requires the school to

provide a computer with better performance for our teachers, and increase efforts to invest in multimedia and network construction.

- (2) Use digital camera, mobile phone, video camera recording, in a quiet environment, a piece of paper, a pen can start, teachers can use a bracket to fix the mobile phone or digital camera, he directly began to explain, this way is more suitable for explaining exercises or examples. Two teachers can also work together. In their spare time, one teacher explains on the blackboard and the other teacher records with a digital camera or video camera.
- (3) Use animation production, mainly with Flash or 3D animation to produce. The images produced by animation are more visual, but the production of relatively high technical content, multimedia application and animation software requirements for teachers are too high, if not professional computer teachers, it is relatively difficult to do, so there are certain limitations.

2.5. The Application Countermeasure of Micro Lesson in Mathematics Teaching

- (1) To clarify the teaching theme, help students quickly and accurately get the key and difficult points of learning. Clear teaching theme is the key to achieve good teaching effect. On the basis of formulating detailed teaching plans, mathematics teachers should carry out teaching with a definite aim and guide students to grasp the difficulties and key points of textbook knowledge correctly. When using micro-lesson, we should narrow the scope to a concept and knowledge point that is difficult to understand or explain, so that micro-lesson can play its due role [10].
- (2) We should pay attention to the differences of students, design micro lessons according to their different basic levels and learning styles, and improve the application of micro lessons in mathematics teaching. The purpose of micro-class teaching mode is to let every student can get different help and improve students' independent learning and innovation ability. Therefore according to the characteristics of mathematics, according to the different students' ability to understand, during building the lesson to take into account the individual needs and learning characteristics of students, really the students as the main body of teaching activity, should not only teach students the basis of considering the learning needs, and to two or more things foundation weak students' learning progress, make the students improve the ability of teaching goals.
- (3) Attention should be paid to the strengthening of knowledge inside and outside the classroom. It is necessary to give full play to the multimedia teaching advantages of micro-lessons and improve students' learning enthusiasm and effectiveness after class. In the micro class teaching of mathematics, teachers generally explain knowledge to students by micro class, in which the micro class video can be made by teachers themselves, shared by school resources or downloaded from the teacher platform of one teacher and one excellent class. At the same time, teachers should also pay attention to students' digestion of knowledge in class, focus on the common problems and difficulties encountered by students in micro-class learning, and guide students to further think about the important and difficult points. Students can through teachers teaching video, according to own understanding ability, reasonable arrangement of viewing time, difficult to understand the place can pause, playback to adjust, so that we can better control the learning process according to the students their learning situation, to further strengthen the strengthening of the textbook knowledge both inside and outside the classroom, thus to improve the effectiveness of classroom teaching.

- (4) We should attach importance to the communication and cooperation among students, and promote students to help each other and make progress together through group learning on the basis of cultivating students' independent learning, so as to further play the teaching effect of micro-lesson mode. Small class teaching mode emphasizes the students is the main body of teaching activity, is above the give full play to students' autonomous learning ability of a teaching mode, so cultivating students' ability to find and fix problems is crucial, and takes the form of group learning, can not only help students progress to each other, and can improve the students' ability of expression and communication ability. It is of great significance to promote students' overall progress. Students think about problems through independent learning. After the exam, we can explore in the way of group cooperation. After class, we can solve problems in the exploration of group cooperation, which can improve students' mathematical thinking ability and cultivate their communication ability. Results can be displayed in various forms, such as group competitions, to increase knowledge sharing and communication among students and fully mobilize students' learning initiative to achieve common progress.

III. CONCLUSION

Micro class through the brief but not simple video form, provide students with better usability, interactive classroom, in mathematics teaching, according to important and difficult problem, using a variety of production, to produce more targeted on video, can help students before class, class, after class better according to their own situation to study, causes the class and extracurricular organic combination, It provides a good new teaching mode for mathematics teaching to cultivate students' self-learning ability.

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