Improve the Quality of College Mathematics Teaching by Flipping the Classroom

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Abstract: University mathematics is a required course for many colleges and universities, and it is also an examination course for examinations. Although colleges and universities attach great importance to the teaching of university mathematics, due to the influence of many objective factors, the teaching effect has always been less than ideal. The flipping classroom focuses on students, improves the students’ ability to learn independently, and increases student-teacher interaction and interaction so that students can complete university mathematics studies with high efficiency and quality. This article first briefly introduces the concept of flipping classrooms, analyzes the role of flipping classrooms, and finally studies and discusses the application of flipped classrooms in college mathematics.

1. Introduction
Mathematics is an important course both in primary school and university. Especially in university, university mathematics has always been the focus of education, but the teaching effect has always been less than ideal. Students also do not pay enough attention to the study of university mathematics. The teaching content of mathematics is also relatively boring. The decline in students' enthusiasm for learning and the lack of active classroom learning atmosphere has further affected the teaching effect of university mathematics. In the university teaching reform, the change of teaching mode is an important means. Turning the classroom plays a huge role. Flipping classrooms can allocate classroom time more scientifically and reasonably. Students can finish learning independently, change the traditional teaching mode, and improve the relationship between teachers and students. Therefore, in order to maximize the quality of university mathematics education, it is necessary to focus on the application of flipping the classroom.

2. Content of the Flipping Classroom
Flipping the classroom is actually a kind of reform in the traditional teaching methods. It not only can consolidate the knowledge learned in class, but also can realize the consolidation of after-class knowledge. It is an "inverted" solution to learning. Using the Internet to listen to learning videos, students can learn and consolidate the learned knowledge on the Internet. Teachers can also help students answer questions online and help students learn. One of the most distinctive features of flipping the classroom is that student-centered teaching occupies the dominant position of teaching. In flipping the teaching process of the classroom, students' learning awareness can be maximized. Learning can also be based on their own preferences to choose their own network learning. Students can pre-require through the Internet before class. In class, teachers need only slightly guide and communicate and communicate with students to answer students' questions. The teacher is no longer the leader of the classroom, but also the tutor of the teaching, guiding the students to study, and the
center of the classroom becomes a student.

3. Effects and Characteristics of the Flipping Classroom
First, the role of teachers has changed. Nowadays, the concept of education and education is undergoing tremendous changes. Turning classrooms has gradually become a new type of teaching model with good development prospects. The existence of this teaching model also brings new challenges to traditional teaching methods. It is also necessary to change its position, transform the original absolute dominance of teachers into student-centered, and the design of teaching needs to change along with it. Students should pay attention to the guidance of self-directed learning, attract students' attention, and enable students to participate actively in the classroom. In addition, teachers need to improve and improve their learning content and design more attractive and effective interactions. The need for flipping classrooms for teachers is also increasing. The flexibility of classrooms is also being strengthened. Teachers, as the hull of information, need to meticulously sort out the contents of the classroom, flexibly and closely link teaching materials and classroom content, and use multimedia technology to better complete the transfer of classroom content and achieve better knowledge sharing.

Second, increase student motivation. Flipping the classroom can achieve the adjustment of the relationship between students and learning materials. Before class, students can complete the preparatory study independently, find the problem, and achieve more targeted learning in class, and can be more serious for the problematic department. Listening to achieve the best results of autonomous learning. In the new classroom teaching mode, the time allocation of the classroom is more flexible and free. Students can promptly reflect and present doubtful parts and understand the learned knowledge more deeply. Students can improve their autonomy and feel the joy of learning at the same time.

Third, classroom time allocation is more scientific and the teaching efficiency is improved. Compared with the traditional teaching model, the flipping classroom can allocate the classroom time more rationally and scientifically. Students need to improve the preparation of the preview. The teachers answer the students' doubts during teaching, teach the courses, and promote the students to complete the independent study. Self-directed learning enables students to self-check data, understand knowledge more profoundly, and more actively listen to teachers’ knowledge. Turning over the existence of classrooms can improve the efficiency and quality of teaching, and at the same time, it can also satisfy students’ more personalized learning needs, improve students’ learning autonomy, and improve their learning ability and enthusiasm.

4. Specific Using Ways of Flipping Classrooms in University Mathematics

4.1. Effectively design classroom knowledge and produce teaching videos

4.1.1. Identify knowledge points
When applying the flipping classroom in university mathematics, you need to classify and sort out the classroom knowledge points. According to the well-organized knowledge points, make a simple video and only make a script. The content of the video should include all the curriculum knowledge points, and you should make eye-catching highlights. The logo, classroom knowledge points need to be representative, improve video production quality. The content of the video needs to have a certain amount of interest. According to the content of the teaching, an appropriate teaching case can be selected. Students can acquire knowledge in an active classroom atmosphere. The flipping classroom can also be more easily accepted by students, and at the same time, the video can be fully utilized effect.

Teachers need to create a short but exquisite video, and also create a learning task list, publish it and publish it on the web course. When formulating pre-learning tasks, it is necessary not only to set up some routine questions, but also to set up open questions and provide different topics according to
different majors, so that students can recognize the specific applications of high numbers in their professions, it also can improve students' ability to collect data and organize data. For example, when teachers explain the parameter estimation problem, they can develop a learning task list as shown in Table 1.

| Table 1 Learning Task List |
|-----------------------------|
| 1 concept                   | Parameter estimation, point estimation, interval estimation, confidence interval, confidence level, significance level, confidence limit |
| 2 methods                   | Method of moments, maximum burning method |
| 3 Nature                    | Unbiasedness, superiority, sufficiency, completeness |
| 4 Calculation               | Confidence intervals, moment method estimates, maximum likelihood estimators for population means |

4.1.2. Reasonably Controlling the Content and Length of Video
Before making a video, teachers must first write a script based on the knowledge point, then record the video according to the script, and also reasonably control the content and length of the video. In flipping the classroom, the video is the basis for its creation. The video can highlight important classroom knowledge points and attract students' attention more effectively. Therefore, video production is crucial. Teachers should pay special attention to the choice of video production content. The length of the video should be kept within 4-6 minutes. If the video is too long, students will feel boring.

4.1.3. Increase Interactive Quiz
Strengthening teacher-student interaction is an important part of flipping the classroom, so teachers can add small test links to the video to increase interaction and communication between teachers and students. The production of interactive test should be based on the student's video viewing. The quiz can test the situation and effect of students watching videos and learning knowledge. It can also deepen students' understanding of knowledge and improve students' attention. The teacher divides the students into several groups, based on the student's grades and the total number of classes. The general situation is a group of six students. The group includes both good and intermediate grades, but also includes poor learning. The number of people must be equal, or grouped according to the dorms. In the group, the team leader is selected to be responsible for the group discussion, score the members' learning situation in the group, record the doubts and learning of the group members, and give feedback to the teachers. After the students complete their study tasks, they must conduct group discussions, communicate and communicate with each other, and help each other to help further deepen their understanding of knowledge, answer their own doubts, and finally record the learning outcomes and new lessons learned in the classroom. If you still have problems, you can seek help from other teams or teachers.

4.2. Optimize classroom teaching order and create a flip classroom

4.2.1. Improve Students' Autonomous Learning Ability
The purpose of flipping the classroom is to improve students' self-learning ability. Students can use video to achieve self-study. They can complete previews before classes, watch teaching videos during class, and can complete self-study review after class so that students can learn independently and take the initiative. Learn to become the master of learning. Teachers should do the guiding work, have a
comprehensive understanding of the students' learning situation, help them learn to answer questions, enable students to better understand the teaching content, and learn more when watching videos. Flipping the classroom can also reduce teachers' teaching pressure and teaching difficulty. Teachers need to constantly optimize classroom teaching procedures and improve students' ability to study independently.

On the premise of students completing the group discussion, teachers should organize students to demonstrate the results of their learning, report on their new learning, share the questions in the group with everyone, and teachers and other groups to discuss and answer questions. If all teams have the same problem, teachers need to seriously analyze and explain to students, as far as possible to ensure that all students can understand. Before the end of the class, teachers should summarize and summarize the teaching situation.

4.2.2. Conduct self-testing
Students will have doubts and problems after reading the instructional video. Students can use the quizzes in the video to complete their own tests. Teachers need to do a good job of self-directed testing. They must promptly provide comprehensive and detailed answers to students' problems in self-inspection. They can also allow students to look at videos with questions and deepen their understanding of teaching content, it can also answer student questions. Therefore, teachers need to actively guide students to complete self-testing, which is also one of the important means to improve students' learning ability.

Teachers can set up some questions that are slightly more difficult, organize team members to discuss and study, control the students' inquiry situation in real time, and conduct guidance work so that students can solve problems as much as possible and improve their ability to solve problems. The discussion within the group can also improve students' ability to work together in teams. In the process of solving problems, students can also improve their innovative and research skills. For the situations and problems discussed in the group, teachers should explain, summarize and summarize in detail.

4.2.3. Giving Answers
Although the flipping classroom focuses on cultivating students’ autonomous learning ability, it does not require teachers’ knowledge. Compared with the traditional classroom teaching mode, flipping classrooms have higher requirements for teachers. Teachers no longer just teach knowledge points, but they pay attention to guiding students, transform students passively accept teaching content with active learning, and guide students. Answer students’ questions and problems. University mathematics has a certain degree of difficulty. Teachers need to take into account the characteristics of university mathematics, effectively predict the possible problems of students, and focus on explaining important knowledge points, so as to make up for the lack of students in autonomous learning.

4.2.4. Evaluation and Assessment of Teaching Achievements
After completing the teaching of classroom content, teachers need to evaluate and assess student performance. Teachers should evaluate students’ learning ability, and also need to complete the assessment of students’ knowledge mastery level. In this way, the teaching effects of the classroom can be reversed, the problems existing in the classroom can be found in a timely manner, and problems can be better optimized and improved, and the flipping classroom can be improved. The teaching quality and effect make the flipping classroom better meet the needs of teaching and students. Therefore, in the flipping classroom, it is very important and necessary to evaluate and evaluate the teaching achievement. At the same time, it can also make up for the inadequacies in many flipping classroom teaching modes. After each classroom is over, teachers need to complete the evaluation and assessment of teaching results in time, and adjust the next sugar content arrangement according to the feedback results.

In the ten minutes before the end of the class, the teacher can carry out the test of teaching results, test the situation of students’ knowledge, and deepen their understanding. After the classroom
technology, students can complete the combing and internalization of knowledge through online self-test, complete the detection of learning effects, and teachers can adjust the learning progress according to the test results in time and change the teaching methods and strategies.

5. Conclusion:
All in all, the society is rapidly developing today, and colleges and universities need to cultivate more outstanding talents. Therefore, it is necessary to improve and improve the teaching model, apply the flipping classroom to university mathematics teaching, and maximize the teaching effect of university mathematics. The quality of teaching increases student's enthusiasm for learning, activates classroom atmosphere, and improves students' learning ability and teamwork ability.

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