

# Application of Modern Educational Technology in College Mathematics Teaching under the New Situation

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**Abstract:** Owing to the continuous progress of technology, the application of modern educational technology in college mathematics teaching is becoming increasingly widespread. This trend not only provides new teaching methods for college mathematics teaching, but also improves students' learning outcomes. Therefore, college mathematics teachers should clarify the significance of modern educational technology, make reasonable use of modern educational technology, improve the quality of classroom teaching, and steadily enhance students' mathematical and information literacy.

## 1. Introduction

In recent years, the widespread application of modern educational technology has ushered in a new progress opportunity for college mathematics teaching classrooms. However, due to various factors, some mathematics teachers have not realized the significance of modern educational technology for mathematics teaching activities, nor have they created more scientific and reasonable teaching plans based on the current teaching situation, making it difficult for some students to accurately grasp complex mathematical knowledge within the specified time.

## 2. Role of Modern Educational Technology in College Mathematics Teaching

### 2.1 Improve Teaching Quality

By utilizing modern educational technology, teachers can better integrate and present mathematical knowledge, making abstract and difficult mathematical concepts and formulas more vivid and easy to understand. For example, by creating multimedia courseware, teachers can present abstract mathematical concepts and formulas in various forms such as images and animations, helping students better understand and master them. In addition, utilizing resources such as online learning platforms and digital libraries, students can learn anytime and anywhere. It will not only effectively improve the overall learning efficiency of students, but also ensure that the overall quality and effectiveness of mathematics teaching fully meet their various needs <sup>[1]</sup>.

### 2.2 Stimulate Students' Interest in Learning

The application of modern educational technology has made college mathematics teaching no longer limited to traditional classroom teaching methods, but through various forms of digital teaching methods, such as online courses, online discussions, interactive teaching, etc., making mathematics learning more vivid and interesting. In addition, students can also apply mathematical knowledge to practical problems by participating in online mathematical competitions, mathematical modeling competitions, and other activities, thereby enhancing their learning enthusiasm and interest.

### 2.3 Enhance Students' Autonomous Learning Ability

The application of modern educational technology provides students with a platform and resources for autonomous learning. Students can explore mathematical knowledge independently

through online learning platforms, digital libraries, and other resources, without being limited by time and location. In addition, students can also use online communication platforms to communicate and interact with teachers and classmates, timely solve problems encountered in learning, and improve their ability and effectiveness of self-directed learning.

### **3. Main Problems Faced by College Mathematics Teaching in the New Situation**

#### **3.1 Ambiguous Goals and Slow Content Updates**

Currently, due to some college mathematics teachers not fully utilizing their spare time to carefully study mathematics textbooks, there is a lack of clear teaching objectives in various aspects of college mathematics teaching. This situation not only seriously affects the efficiency and effectiveness of mathematics teaching, but also makes it difficult for a few students to master complex mathematical knowledge within the specified time. In classroom teaching, some college mathematics teachers often only focus on imparting knowledge, while neglecting to cultivate students' mathematical literacy and application abilities. This leads to students being unable to truly understand the connotation and value of mathematical knowledge, let alone apply what they have learned to practical life. In addition, the teaching content of some college mathematics courses is slowly updated and disconnected from the pace of modern technological progress. Teachers place too much emphasis on imparting mathematical knowledge and neglect to introduce the latest mathematical research results and application technologies into teaching. This prevents students from being exposed to the latest mathematical knowledge and application technologies, and their interest in learning mathematical knowledge will gradually decrease.

#### **3.2 Single Method and Insufficient Information Technology Teaching**

From the current situation, the single teaching method has become one of the main problems faced by college mathematics teaching in the new situation. Usually, some college mathematics teachers still use traditional teaching methods, seriously ignoring the advantages and value of using modern teaching techniques and methods. This situation not only leads to a lack of practical operation opportunities for students, but also cause some students to develop emotions such as resistance and aversion to learning mathematical knowledge. At the same time, traditional teaching models such as "teachers speak, students passively accept" are no longer able to meet the comprehensive progress needs of students, and in severe cases, a few students may develop a mentality of dependence on teachers. In addition, with the progress of information technology, information technology teaching has become a crucial trend in college mathematics teaching. However, the information technology teaching of many college mathematics courses is still far from sufficient. Teachers lack the ability to use modern teaching software and tools, and are unable to effectively utilize information technology to improve teaching quality and efficiency [2].

#### **3.3 Unreasonable Teaching Evaluation**

Teaching evaluation is one of the important links in college mathematics teaching, which is of great significance for understanding students' learning situation and improving teaching quality. However, the teaching evaluation of some college mathematics courses is not reasonable. The problems of unclear evaluation standards, too single evaluation indicators, and too simple evaluation methods are common. This results in the evaluation results not being able to accurately reflect the learning situation of students and the teaching effectiveness of teachers, which affects the improvement of teaching quality. In addition, college mathematics courses require teachers to possess high mathematical literacy and teaching abilities. However, the quality of teachers in some college mathematics courses still needs to be improved. They lack a deep understanding and mastery of mathematical courses, and are unable to effectively guide students to learn mathematical knowledge.

## **4. Application Strategies of Modern Educational Technology in College Mathematics Teaching under the New Situation**

### **4.1 Multimedia Teaching, Visually Demonstrating Mathematical Knowledge**

As is well known, traditional forms of college mathematics teaching are usually teacher-centered, with textbooks as the main teaching tools. But with the advent of the information age, the rapid progress of modern educational technologies such as computer technology, network technology, and artificial intelligence has injected new life and vitality into college mathematics teaching. Therefore, college mathematics teachers should actively innovate their teaching philosophy by creating multimedia courseware for mathematics courses, presenting abstract mathematical concepts, formulas, and other content in vivid and interesting musical and visual contexts in front of students, effectively assisting them in better analyzing and learning mathematical knowledge. In addition, college mathematics teachers should also fully use teaching tools such as electronic whiteboards, and utilize more interesting and educational mathematical problems to achieve real-time interaction with students. At the same time, they should guide students to personally experience learning processes such as analyzing problems, solving problems, and summarizing knowledge points, ensuring that students' mathematical literacy can be steadily improved [3].

For example, when explaining mathematical and statistical knowledge, to guide students to accurately grasp statistical knowledge and experience the close connection between statistical knowledge and real life, teachers can take advantage of the highly popular "Hangzhou Asian Games" as an entry point, and use multimedia teaching equipment to play videos of Chinese athletes fighting for glory on the competition field. They can show the number of gold medals from various countries, allowing students to collect and review the number of medals won in various competition projects in China in groups. Students are required to combine knowledge of new courses, flexibly use various statistical charts to accurately express the number of medals won in each competition and the proportion of medals in the total medal count. In addition, to exercise students' ability to analyze and solve problems, teachers should also use things that students are familiar with to carry out mathematical exploration activities, such as flipping coins, actively exploring and summarizing random events and probability knowledge.

### **4.2 Online Learning Platform, Expanding Teaching Resources**

Nowadays, exercising students' thinking ability has become the main goal of college mathematics teaching activities. Therefore, teachers should fully leverage the advantages of modern educational technology, reasonably utilize online learning platforms, expand teaching resources from multiple aspects and angles, and broaden students' horizons. In subsequent learning, students should no longer be limited to mathematical knowledge in textbooks, but instead use course materials and exercise bank provided by online learning platforms, personally experience the learning process of discovering, thinking, and solving problems, then ultimately develop more excellent self-directed learning habits under the reasonable guidance of teachers. In addition, college mathematics teachers can also use artificial intelligence technology to provide personalized guidance for students' mathematical learning, helping them better master mathematical knowledge.

Taking the relevant knowledge of "Functions" as an example, to guide students to correctly grasp the definition and representation methods of functions, and know the characteristics of functions such as parity, monotonicity, periodicity, and boundedness. Before the formal launch of teaching activities, teachers should carefully study the textbook, create corresponding PPT courseware based on the key and difficult knowledge points in the textbook, and place the completed PPT courseware on multimedia teaching equipment, encourage students to independently learn about function related knowledge based on the textbook, try using mind maps and other methods to summarize the definition and representation of functions, and use examples to verify the correctness of the conclusions. After students have a preliminary understanding of function knowledge, teachers should also use more representative exercises to assess their mastery of function knowledge. At the same time, they should encourage each student to step onto the stage one by one and share their problem-solving ideas and inspiration with other students, so that students can have a deeper

understanding and cognition of function knowledge in a mutually supportive learning atmosphere [4].

### 4.3 Respect Individual Differences and Achieve Timely Evaluation and Feedback

Evaluation is not only a crucial part of college mathematics classroom teaching under the background of the new curriculum standards, but also a main means of accurately judging students' mastery of mathematical knowledge. Therefore, teachers need to adopt a combination of online and offline methods, reasonably use methods such as student self-evaluation and student mutual evaluation, fully meet students' personalized needs from multiple aspects and perspectives, and help students achieve comprehensive progress. Teachers also need to use the online learning APP to assign homework and classroom exercises based on students' classroom performance and actual learning situation. They ought to combine students' mistakes and confusion points to push different types and difficulty of exercise questions for students, and require them to complete them within the specified time. In addition, teachers should also use interactive teaching software to enhance the fun of practice activities, such as creating game competitions based on students' age characteristics and interests, allowing them to compete on the same screen and truly achieve "learning by playing".

For example, teachers can use online learning apps to design "challenge" games, adapting or innovating students' questions that are easy to make mistakes in daily tests, encouraging students to use the knowledge they have learned to solve the problems assigned by the teacher. Teachers should also give students more opportunities for independent reflection, identify their own shortcomings, and actively learn and listen to other students' problem-solving ideas and methods. In addition, teachers should also adopt a point-based homework model, allowing students to independently select homework content based on their learning ability. When the points reach a certain amount, they can exchange for corresponding rewards. It can be seen that this teaching mode can not only guide students to develop better self-directed learning habits, but also lay a good foundation for the improvement of students' core literacy [5].

## 5. Conclusion

In summary, in the new educational situation, modern educational technology has played an important role in college mathematics teaching. Therefore, college mathematics teachers should keep up with the pace of educational reform, use modern educational technology reasonably based on students' classroom performance and actual learning situation, improve teaching quality, and help students develop better self-directed learning habits.

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