

Exploring the Reform Strategy Analysis of Integrating Online and Offline Teaching in University Mathematics Courses

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Abstract: With the rapid development of internet technology, online education has become an important trend in the education industry. Especially under the influence of the global COVID-19 epidemic, online teaching has been widely applied and promoted. However, there are also some problems with online teaching, such as a lack of realism and low student engagement. Therefore, exploring the integration of online and offline teaching models has become a hot research topic in the field of education. This article will analyze the reform strategy of integrating online and offline teaching in university mathematics courses, aiming to explore how to improve the teaching effectiveness of university mathematics courses and promote students' learning interest and ability through the integration of online and offline teaching.

Keywords: College Mathematics; Online and Offline; Integration Strategy

Introduction

College mathematics courses are an important component of higher education and are also mandatory basic courses for various majors. However, in traditional teaching models, due to limited classroom time and teacher resources, it is often difficult to fully meet the needs of students and improve teaching effectiveness. At the same time, under the influence of the COVID-19, the application of online teaching mode has also made online teaching a possible choice for college mathematics courses [1]. Therefore, in this context, exploring the reform strategy of integrating online and offline teaching of university mathematics courses has become a hot research topic. By combining online and offline teaching, utilizing the advantages of online platforms to improve teaching effectiveness, increase students' participation and learning interest, further improve the teaching system, and promote the development of educational informatization, these are all issues that need to be considered in the context of this study.

1. Analysis of the Characteristics of Online and Offline Teaching

1.1 Analysis of the advantages and disadvantages of online teaching

Online teaching refers to teaching through online platforms, including video courses, online discussions, homework submissions, and other forms. Its advantages include: high flexibility: online teaching can be conducted anytime, anywhere, with only network devices such as computers and mobile phones available for classes, without being limited by time and space; Diversified teaching content: In online teaching, students can choose the courses they want to learn, and teachers can flexibly set teaching content, which makes online education more diverse. However, online teaching also has some drawbacks: it may affect interaction and communication: in online teaching, interaction and communication between teachers and students may be limited, and students may feel a lack of face-to-face interaction experience; Technical issues: In online teaching, if there are technical issues with students' network devices or teachers' devices, it will affect the teaching effectiveness. In summary, online teaching has advantages such as convenience, personalization, interactivity, and resource sharing, but there are also shortcomings such as technical requirements, lack of face-to-face communication, difficulty in ensuring learning outcomes, and security issues.

1.2 Analysis of the advantages and disadvantages of offline teaching

Offline teaching refers to traditional face-to-face teaching methods, including classroom teaching, experimental teaching, discussion classes, and other forms. Its advantages include: good communication effect: offline teaching can have face-to-face communication and interaction with students, promote communication and exchange between teachers and students, and is conducive to the learning effect of students; Stable learning outcomes: Offline teaching can promote students' thinking and understanding through classroom interaction and questioning, which is conducive to stable learning outcomes for students; Strong teacher control ability: Offline teaching can enable teachers to better control classroom teaching, timely identify and solve students' problems, and improve teaching effectiveness. The corresponding drawbacks include: time and location limitations: offline teaching requires students to go to designated locations for learning, and time and location limitations may affect students' learning outcomes; Low degree of personalization: The teaching content and methods of offline teaching are relatively fixed, and the degree of personalization is low, which cannot meet the personalized learning needs of students.

3. Strategies for Integrating Online and Offline Teaching in College Mathematics

3.1 Building a blended teaching model based on a smart education platform

Smart education platform is a modern education service platform based on internet technology, with teaching as the core, integrating various means such as informatization and networking. It achieves the sharing and optimization of teaching resources by deeply integrating teaching content, teaching process, and teachers and students, thereby improving the effectiveness and quality of teaching and learning. At present, online teaching of mathematics in universities includes Tencent Classroom, MOOC, and others. China University MOOC is an online learning platform jointly launched by China Higher Education Press and Superstar Group, covering hundreds of universities across the country and providing thousands of high-quality courses for free online learning and assessment.

In the process of building a hybrid teaching model based on smart education platforms, it is first necessary to select appropriate smart education platforms based on needs and actual situations, such as Moodle, Blackboard, etc. These platforms all provide various functions such as online course management, student interaction, homework submission, and integration with other tools. Then convert the teaching content of the offline classroom into online accessible resources, such as recording videos, creating PPTs, uploading documents, etc. At the same time, it is also necessary to consider how to connect offline and online teaching, so that students can have a complete learning experience. When using smart education platforms for blended learning, it is also necessary to develop detailed teaching plans and objectives. This includes weekly teaching content and tasks, as well as learning goals that students need to achieve. In addition, before applying the platform, it is necessary to ensure that both teachers and students are proficient in using the smart education platform and understand its functions and operating procedures. Provide necessary technical support and training to solve problems and confusion that teachers and students may encounter during the use process. We also need to ensure data security and student privacy protection on smart education platforms. Take corresponding measures to ensure that students' personal information is not leaked or abused, and maintain good network security during online learning and communication.

3.2 Optimizing Teaching Activity Design Based on Online and Offline Integration Teaching

The meaning of optimizing classroom activity design refers to cleverly designing classroom activities through the comprehensive utilization of online and offline teaching resources, improving teaching effectiveness and learning experience. This includes designing activities before, during, and after class, as well as connecting and coordinating online and offline activities. By optimizing the design of classroom activities, students' learning interest and motivation can be better stimulated, and their participation and interactivity can be improved.

In blended learning mode, teachers can provide detailed review guidance in an online environment, including review plans, key knowledge points, and topic recommendations. This way, students can carry out targeted review according to the guidance, ensuring the correct direction and content of the review. Alternatively, create online instructional videos to clarify the key and difficult points of the course. Through the explanation video, students can follow the teacher's explanation and deepen their understanding and memory

of knowledge during the review process. In addition to online resources, teachers can also arrange offline after-school tutoring and Q&A time, giving students the opportunity to ask questions and receive answers. Through face-to-face communication with teachers, students can better understand and master the review content. At the same time, when designing and organizing after-school review activities, teachers should make reasonable adjustments and arrangements based on students' actual situations and needs to ensure the effectiveness and pertinence of the review activities.

3.3 Building a Multiple Evaluation System through the Integration of Online and Offline Teaching

The traditional single evaluation method cannot fully reflect students' learning level and ability. However, with the help of online and offline integrated teaching, various types of evaluation methods can be designed based on different teaching stages, thereby more comprehensively and objectively evaluating students' learning effectiveness and ability. For example, during the pre class preview stage, students' basic knowledge can be tested through online tests or exercises; In the classroom teaching stage, students' thinking and communication abilities can be evaluated through group discussions or interactive Q&A methods; In the after-school homework stage, various types of homework can be set up, such as practical homework, speculative homework, research homework, etc., to evaluate students' comprehensive and innovative abilities.

Epilogue

In the current digital era, the integration of online and offline teaching is gradually becoming an important strategy for the reform of university mathematics courses. By combining smart education platforms with traditional teaching models, online and offline integrated teaching provides students with more flexible and personalized learning methods, and brings many opportunities and challenges. Through integrated online and offline teaching, students can independently choose their learning time and location to adapt to individual differences and learning needs. However, the implementation of integrated online and offline teaching also faces some challenges. Firstly, teachers need to adapt to new teaching modes and technological tools, continuously improve their teaching abilities and innovative awareness. Secondly, the technical support and security guarantee of the teaching platform are also key issues, ensuring the stable operation of the teaching platform and the protection of students' personal information. In addition, online and offline integrated teaching requires more time and energy for course design and content updates to meet students' learning needs and improve teaching effectiveness.

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