

Research on Innovation and Reform Path of Mathematics Teaching in Colleges and Universities under Internet Big Data Environment

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Abstract: The use of the Internet is becoming more and more widespread in today's society, where it has an impact on every facet of people's lives and pervades every part of their daily life and employment. Under the influence of the internet plus, education should keep pace with technological advancements, and Internet information technology should be incorporated into college mathematics at the university level in order to increase students' learning effectiveness for math concepts and raise the bar for high school mathematics instruction. It has been challenging to address the demands of students for growth using the traditional teaching method since the advent of the Internet. When conducting instructional activities in the classroom, college mathematics instructors should further enhance their teaching strategies and use adaptable teaching techniques. mathematics. College mathematics classroom teaching encounters issues including outdated concepts, inappropriate techniques, a lack of engagement, and dull content, which have a direct impact on the teaching outcome. These issues are caused by the influence of teaching materials, teaching ideas, and other variables. Therefore, in order to better realize the innovative development of college mathematics classroom teaching, we should examine the problem of teaching college mathematics from the perspective of the "Internet, Teaching" era, optimize the teaching concept with Internet thinking, and optimize the teaching process and mode with Internet technology. Internet usage serving as the backdrop, updating the curriculum To make the teaching content more relevant and focused, schools and universities should base their teaching practices on current events, their own level of construction and administration, and their understanding of the demands of the industry and their students. Utilize the fairness and transparency of the Internet to your advantage, actively alter your connection with your pupils, and create a productive, equitable, and harmonious environment for learning. The level of education and teaching must be progressively improved by increasing process management, while universities and instructors must make full use of Internet technologies, optimize teaching strategies, reform the evaluation system, and change the way assessments are conducted.

1. Introduction

Advanced Mathematics, a required public subject, has a significant practical role in developing students' capacity for logical reasoning, thorough computation, and imaginative thinking. However, given the current environment, several higher vocational institutions have a challenge with the teaching reform of advanced mathematics due to the use of rather antiquated teaching techniques. As a result, it is essential to examine the concepts and practical avenues of teaching reform against the "Internet" backdrop. enhancing the assessment of higher maths instruction We should also integrate Internet technology to enhance the teaching assessment in higher vocational colleges in order to assure the comprehensiveness of the teaching reform of higher mathematics. To be more specific, the prior achievement-only theory should be changed in the course assessment process in order to more effectively combine the teaching process, students' Learning attitude, completion of educational activities, and online learning records all contribute to a stronger online and offline combination. In order to properly perform the function of teaching assessment, we must pay attention to fostering students' learning autonomy, safeguarding their enthusiasm in advanced mathematics learning, and enhancing their problem-solving skills.

2. Study the development of Advanced Mathematics in higher vocational colleges under the background of "internet plus" The Practical Path of Teaching Reform of "Learning"

2.1. Improve the information-based teaching level of higher mathematics teachers

As far as the teaching reform of Higher Mathematics in higher vocational colleges is concerned, mathematics teachers are the direct participants and executors of this work. Especially in the context of "internet plus", the information-based teaching level of teachers directly affects the quality and efficiency of teaching reform. Therefore, it is necessary to improve the information-based teaching level of Higher Mathematics teachers in higher vocational colleges and implement modern teaching concepts, thus laying a good foundation for the effectiveness of teaching reform. Specifically, from the current situation, most mathematics teachers in higher vocational colleges can skillfully use basic teaching software such as Flash or PPT, and the main application direction is the compilation of lesson plans, which does not give full play to the great advantages of various information technologies under the background of the Internet era. Therefore, firstly, higher vocational colleges should add information technology-related teaching to the content of mathematics teaching and training, increase their learning channels of information-based teaching methods, and constantly build their awareness and ability of information-based teaching, so that they can actively combine information-based education platform or educational software with advanced mathematics teaching activities, and improve the teaching efficiency and quality while realizing the teaching reform of Advanced Mathematics. Second, advanced mathematics teachers themselves should actively improve their own teaching system and teaching ability, and should be able to skillfully carry out the production of micro-courses or the organization of online teaching activities, so as to realize "face-to-face" communication with students outside the classroom. At the same time, the teaching and research group of higher mathematics in higher vocational colleges should hold regular seminars, discuss and analyze the problems in the process of informalization teaching for a period of time, and study the solutions. In the process of communication, the sharing of information-based teaching experience can be realized, and then the information-based teaching level of the whole teaching team can be improved, and the smooth reform of Advanced Mathematics teaching can be realized.

2.2. Use internet plus's online education resources to innovate the efficiency of deep learning.

The classroom of mathematics is influenced by China's new educational reform, and teachers are aware that the teaching needs constant innovation and reform, so as to cultivate students' subject core literacy more efficiently and promote the all-round development of students' quality education, which is applicable to students at all stages. For college students, although they are mature in age and mind, they still need innovative teaching mode in the process of teaching activities to drive them into more and more advanced and complex learning contents, so that they can face the heavy learning life with a more positive attitude. In the university stage of mathematics It's already quite difficult for some students, and with the boring learning environment, it's easy to give up. Therefore, in college mathematics classroom, teachers should actively innovate the teaching mode, guide students' interest in learning and improve their learning efficiency. At the same time, it also enables students to relax the pressure of body and mind in a relatively light and interesting environment, so as to promote students to better understand and master mathematics knowledge, and like mathematics learning, which will help students in the next more arduous learning tasks. Learn more effectively.

2.3. Introduce new teaching methods to improve teaching quality

In the era of "Internet "College professors should be adept at utilizing online learning platforms in the "Internet" era. Before, during, and after classes are the three distinct phases of the teaching process. Teachers do pre-class preparations, issue class announcements, and push sample courseware on the network platform before class. Students' learning will be improved because they may become familiar with the course's main ideas and challenges in advance and switch from passive acceptance to active exploratory learning, which allows students with varying skill levels to

get ready for various scenarios before class. Enhance student passion for learning, assure teaching quality, and ensure the course's impact on the teaching process. Enthusiasm. In the classroom. To realize a new teaching mode with students as the main body and teachers as the leading, so that students become the protagonists of their own learning, the majority of classroom instruction takes the form of intensive lectures or discussions. However, the teaching content of special class hours or special chapters can also be taught in an online teaching mode. Finally, in order to address student learning gaps, assess such gaps through question-and-answer sessions, tests, and post-class comments, make up for omissions, and enhance the teaching process in order to improve teaching objectives and quality.

3. The reform and innovation of online teaching mode of college mathematics course Tactics

3.1. The reform of college curriculum teaching in the context of the Internet Leather entry point

In light of the Internet, colleges and universities should reform their curricula in a way that is in line with current trends, takes into account the level of operation and construction of the institution, and is driven by the needs of the labor market and the students themselves. This will result in a more relevant and focused curriculum. Utilize the fairness and transparency of the Internet to your advantage, actively alter your connection with your pupils, and create a productive, equitable, and harmonious environment for learning. The level of education and teaching must be progressively improved by increasing process management, while universities and instructors must make full use of Internet technologies, optimize teaching strategies, reform the evaluation system, and change the way assessments are conducted.

3.2. Strengthen teachers' ability to use the network, and effectively improve teachers' Information literacy

The "internet plus" era is an information age, and teachers must improve their information literacy. As a teacher, we should make full use of network resources, strengthen study, master the basic technology of computer information processing, and improve our professional level and ability. There are many platforms and ways for online learning to improve teachers' ability to use the Internet. For example, if a teacher wants to design a course, there are many excellent online resources for reference, and they can learn about how to design, build and teach a course, which will be of great help to improve teachers' teaching ability. In addition, the school should strengthen the school-based training of teachers, organize teachers to carry out special training on online teaching ability, cultivate teachers' information education thinking, and improve teachers' information teaching ability and level.

Table 1 Advantages comparison and practical analysis of Internet teaching mode

Pattern classification	Curriculum model	Mian advantage	Grasp the key points
Flipped classroom	Learn the basic knowledge after class and answer question, arguments, and questions in the class.	Reconstruct teaching mode and save classroom teaching time.	Strengthen the control before, during, and after class, and reverse the restoration and correct teaching Learn design
Mini-lecture	With video as the main carrier, emphasizing a single knowledge point	Short, compact, with high focusing capacity, Characteristics of fragmented reading	Multi-media comprehensive application, content combing
MOOC (massive open online course)	Emphasis on difficulties, Interpretation of teaching materials Induction of test sites Massive online courses	The course is large in scale, perfect in the system and outstanding in quality.	The Construction and Utilizatio of Curriculum Platform

3.3. Development advantages of online teaching in college mathematics classrooms

Go beyond the limitations of the classroom, with flexible learning methods and locations In a traditional university mathematics classroom, teachers teach at a fixed time every week, and students must go to the classroom to study at the time and place specified by the school. If students are unable to attend classes for some reason, they need to make up lessons separately after class, subject to the constraints of time and space. The online teaching mode breaks the constraints of traditional classrooms in terms of time and space. Teachers and students can communicate online anytime, anywhere, without space constraints, saving resource costs and improving teaching efficiency. In addition, the content of college mathematics courses is difficult to understand, and students may not fully understand the application after listening to it. The online teaching mode supports course playback. Students can use mobile phones, computers and other terminals to study online anytime, anywhere. The learning location and content are mastered by the students themselves, which is convenient Faster, better promote students' learning and development.

3.4. Existing problems in the online teaching mode of college mathematics courses

Inadequate online teaching design, ignoring differentiated teaching Students' mathematical literacy is uneven, some students show great curiosity and interest in mathematics, have solid basic knowledge and strong learning ability, while some students resist Mathematics learning, the foundation is relatively weak, and the learning ability is weak. For the same knowledge point, under the guidance of teachers, some students can quickly understand it, while others are difficult to digest. This requires teachers to carry out differentiated teaching for students. Students of different levels in the class can be divided into different levels, so that teachers can carry out differentiated teaching with different focuses in the teaching process. It is necessary to ensure that poor students have solid basic knowledge, and at the same time It is also necessary to promote the individualized development of eugenics, but few teachers do this, fail to adequately design teaching, and often adopt a "one-size-fits-all" teaching method, setting the same learning goals and providing the same learning guidance for different students , so that students with different learning levels cannot develop suitable for themselves, resulting in the online teaching mode not giving full play to its due role, affecting the development of students' thinking ability, and affecting the overall quality of teaching.

4. Conclusions

To sum up, Internet-related technologies should be blended and integrated into the transformation of teaching conceptions and the invention of teaching models while carrying out the teaching reform of "Advanced Mathematics" at higher vocational institutions against the backdrop of "Internet." Utilize platforms like the flipped classroom and micro classes actively to enhance the effectiveness of teaching quality and efficiency. The teaching of collegiate mathematics will undoubtedly continue to advance as a result of the Internet. For college students studying mathematics, the Internet offers a wealth of network resources. It also fosters an environment that is conducive to students learning mathematics in detail. Therefore, college mathematics teachers should take advantage of the favorable network development opportunity, and use Internet teaching resources and technical means to create efficient teaching activities against an Internet backdrop. They should also look for ways to raise the bar of mathematics instruction. Overall, college mathematics teaching activities have changed significantly in the Internet era compared to the past, so college mathematics teachers themselves must also establish a new teaching concept, flexibly apply networked teaching methods, and realize the fun and image of classroom teaching., to bring students a more intuitive perception, to promote students to have a deep perception of mathematical knowledge, to strengthen students' grasp of the essence of mathematics, and to bring students a more intuitive perspective

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