Exploration of Teaching Reform of Mathematics Courses in Private Colleges of Shaanxi Province in the New Era

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Abstract

Relying on the background of "Internet+" and following the basic principles and laws of education, through questionnaires and interviews, the current situation of mathematics teaching in private colleges and universities is analyzed. The teaching reform of mathematics in colleges is sorted out. For main problems and causes, the practical measures and countermeasures for curriculum teaching reform, and the forward-looking opinions and suggestions for teaching reform are provided.

Keywords

Blended teaching; Seven-step method; PBL; Reverse curriculum matrix.

1. PREFACE

The "Ten-Year Development Plan for Educational Informatization" points out that higher education informatization is an effective way to promote higher education reform and innovation and improve quality. The implementation of educational reform in colleges and universities needs to rely on the information environment, change traditional teaching methods, enhance students' practical skills, innovate talent training models, stimulate students' learning initiative, improve the quality of college education, and improve the quality of talent training as the ultimate goal. Colleges and universities should actively innovate the teaching mode of colleges and universities, and explore the deep integration of higher education informatization and college education. In the information environment, improve the learning ability of college students and stimulate students' learning initiative. Blended teaching, as an online and offline educational method to improve students' academic performance and learning ability, provides favorable conditions for students to learn actively and provides a new way for my country's teaching reform. At the first new era undergraduate education work conference held by the Ministry of Education in 2018, Minister Chen Baosheng proposed: "It is necessary to enhance the academic challenge of college students, increase the difficulty of courses reasonably, expand the depth of courses, and expand the choice of courses. Turn the'water class' into a deep, difficult, and challenging'golden class'." The introduction of the "golden class" puts forward a new development goal for the teaching of my country's colleges and universities, and college courses have ushered in a new era of challenges And test, explore the new teaching mode of private college courses, and realize the wisdom teaching in the new era.

2. RESEARCH ON THE CURRENT SITUATION AT HOME AND ABROAD

Domestic scholars' research on college classrooms mainly focuses on the impact of the Internet on college classroom teaching and the classroom teaching reforms triggered by it. In 2020, Tang Zikai mentioned in the "Internet + Advanced Mathematics Curriculum Teaching

Reform Thinking and Exploration" that teaching should be classified, teaching students in accordance with their aptitude, and setting up learning excellence awards and higher mathematics competitions to increase students' interest in learning. Construct a school-level online shared course, a teaching model that combines Yu Classroom and Qianbi teaching. In 2020, Mao Peimin mentioned in the "Exploration and Practice of Improving the Informatization Teaching Ability of College Mathematics Teachers in the Internet + Background" to use relevant information three-dimensional resources for teaching, improve the training mechanism and update teachers' concepts to improve the informatization ability. In 2020, Lin Lifang, Zeng Yuedi, etc. mentioned in the ``Advanced Mathematics Smart Classroom Teaching Model Design in the Internet + Background'' that the use of Chaoxing and the learning platform to build a smart classroom teaching model for advanced mathematics before, during and after class, and Take directional derivatives and gradient knowledge points as examples to practice smart classroom teaching mode. In 2018, Zhang Jialu conducted a qualitative study on the teaching innovation practice of teacher informatization professional development and integrated technology in four domestic colleges and universities in the "Research on University Teacher Development and Teaching Innovation in the "Internet +" Era", and conducted a qualitative study on the business director responsible for the development of teacher teaching in the college Interviews with front-line teachers, from the school level and the teacher's personal micro-angle, to understand the development of college teachers under the background of education informatization, as well as the status quo and characteristics of teachers' integration of information technology for teaching innovation, knowledge and concepts, puzzles and problems, Expectations and suggestions. In 2020, Yue Xiaxia proposed the advantages of Internet+ with diversified teaching methods, more flexible teaching models, and sharing of teaching resources in the "Preliminary Exploration of Advanced Mathematics Teaching Practices in the Internet Background". The layered and mixed teaching supplemented by the upper part, the history of mathematics is higher than the teaching, and the teaching of mathematics is strengthened to improve the students' autonomous learning ability.

Western developed universities are leading the world in the application and promotion of Internet technology. American university professor Kenneth Green first proposed the "informatization campus concept" in 1900, and launched the "informatization campus plan" in the same year, taking university informatization as the main body of research. The project selects 600 to 800 American colleges and universities to conduct sample surveys and interviews every year, conduct detailed investigations and researches on the status quo of the use of information technology, and put forward many suggestions and solutions for various problems. There are many government-supported vocational education informatization projects in Germany. The "Digital Training Network" of the Federal Ministry of Education and Science summarizes them as "pedagogy", "learning in the work process", "learning content preparation", "school-enterprise cooperation", and "capability verification and recording" ""Mobile learning" and "Web2.0" 7 categories.

In summary, the developed countries headed by the United States have relatively high standards and rich practical experience in the construction of college teaching informatization. The state and government pay close attention to and vigorously promote the informatization construction of colleges and universities. Attach great importance to the development, utilization and sharing of teaching resources. Attach great importance to the application research of information technology on teaching effects. Comprehensively use various forms to carry out teaching activities and vigorously promote online education. Most domestic colleges and universities are gradually transitioning from the stage of infrastructure construction to a new stage of comprehensive application. The research focus of teaching informatization has gradually shifted to teaching resources, personnel, and management mechanisms. The research content of teaching informatization in domestic universities is extensive and involves many

fields, but the problems involved in each field need to be explored more deeply. At present, there is a lack of in-depth research on key areas in China, and no effective optimization strategies have been proposed. Lack of targeted case study projects. Due to the different factors such as the nature, geographic location, development status of each region, and the degree of importance the management attaches to teaching informatization, the status quo of uneven teaching informatization construction in major colleges and universities has been caused. The integration and innovation of informatization and college classroom teaching still needs a long process. All regions are constantly exploring in combination with their own actual conditions, especially the lack of successful innovative practice cases and programs. Therefore, the reform of classroom teaching in colleges and universities must always be based on the purpose of educating people, adhere to "education-oriented, technology for use", starting from the essential needs of education, rational use of information technology, and promoting the great transformation of higher education.

3. PROBLEMS IN THE REFORM OF MATHEMATICS CLASSROOM TEACHING IN PRIVATE COLLEGES

This article selects our school's teachers and students as the research objects, and takes the classroom teaching environment, classroom teaching process, teachers, students, and teacher-student relationship as dimensions, including students' views on the integration of "Internet +" and education; teachers' teaching and students' learning Changes that have taken place; learning environment satisfaction survey; learning experience survey and learning expectation survey, etc. Through questionnaires and interviews, summarize the following problems in the reform of mathematics curriculum:

3.1. Insufficient Construction of Network Resources and Low Utilization Rate

With the rapid development of information technology, the resources of the online education platform have been greatly enriched, and various high-quality online education courses have also been rapidly enriched and developed, such as MOOC, micro-courses, high-quality open courses, and so on. At the same time, many problems have appeared. The construction of online courses is simple and lacks systematic planning. Online courses are more copying of textbook texts, animation, video and audio, related culture and thinking insertion are less, and the design of the online teaching environment is relatively scarce, which cannot well meet the learning needs of learners. The online education resources of domestic colleges and universities have appeared "emphasize construction and neglect utilization". In addition, due to the lack of effective system planning and sharing mechanisms, universities cannot share high-quality educational and teaching resources. Our school has introduced some high-quality Internet resources, but the mathematics curriculum has not successfully built online courses suitable for our students.

3.2. The Students' Autonomous Learning Ability Is Insufficient and the Ability of Autonomous Thinking Is Restricted

Most college students in private universities lack the ability to learn independently, and students are accustomed to passive learning, which makes it difficult to stimulate students' interest in active learning. After encountering problems, they prefer to rely on smartphones to answer questions, rather than use their brains.

3.3. Students Lack the Skills to Choose Excellent Courses

For online learning resources, the available courses are complex and diverse, and students often do not know how to choose when faced with so much information and courses. Because

most students lack concentration, once they can't find the course content of interest, they are easy to give up online learning.

3.4. Teachers Have Certain Difficulties in Balancing the Relationship Between Traditional Teaching and Online Teaching

In traditional teaching, the role of the teacher is the lecturer, and the task is to prepare the lesson, give it a good lesson, and make a good summary after the lesson. In online teaching, teachers should find their own position. They can neither relax the classroom explanation of traditional teaching, nor ignore the auxiliary role of online teaching, but also do a good job of guiding and assisting students' online teaching. At the same time, the management difficulty of teachers' classroom teaching has also been greatly improved.

3.5. The Evaluation of Students' Learning Effects Is Not Comprehensive

Online teaching is not like traditional teaching that can directly evaluate the performance of students. When students learn online, their learning time and learning effect are difficult to directly show. This requires a redesign of the assessment plan to conduct a comprehensive and reasonable assessment of students.

4. RESEARCH ON COUNTERMEASURES TO DEEPEN THE TEACHING REFORM OF MATHEMATICS IN PRIVATE COLLEGES AND UNIVERSITIES

Faced with many problems in the construction of network resources, classroom teaching models, student learning methods, and teacher teaching transformation, it is necessary to strengthen the overall planning of digital resources, broaden the channels for resource construction, and enable the effective integration of digital education resources Optimization; In the three links of pre-class preparation, in-class teaching, and after-class tutoring, deeply integrate online education and offline education to construct a hybrid teaching model; use active learning and in-depth thinking to change students' learning methods; comprehensively strengthen The ideological and capacity building of the teaching staff.

4.1. Integrate and Optimize Digital Education Resources

Strengthen the overall planning of digital resources, and concentrate on building a batch of high-quality educational resources that are widely used, large in scope, and highly practical. Educational administrative departments at all levels must establish informatization leading groups, strengthen the research and analysis of online education resources, standard formulation and strategic planning, and improve the organization and management mechanism of online resources to ensure the implementation of decision-making and planning. In view of the construction of the network resource environment of colleges and universities, it is necessary to integrate multiple forces and promote the development of digital education resources to a higher degree of openness and sharing through various channels such as self-construction, co-construction and introduction. Self-built methods can be adopted for digital resources that are small in quantity, distinct in personalization, and small in scope of application. Co-construction can be adopted for resources with large quantity, strong commonality, and large application range, while for those high-quality resources that have major difficulties in construction, the method of introduction can be selected. For the actual situation of our school, it is recommended to combine high-quality network resources for localization, and self-built curriculum resources are open to students of our school.

4.2. Constructing A Mixed Teaching Model

The in-depth integration of online teaching and offline teaching is introduced in detail from four parts: pre-class preparation, in-class teaching, after-class tutoring, and effect evaluation.

Before class: [1] Integrate excellent online teaching courses into resources and continue to learn from them. Select and integrate high-quality online learning courses, repeatedly modify, integrate and localize based on teaching goals, and finally form resource sharing. By referring to the teaching advantages of online courses, teachers can continuously improve their own teaching level, and can find and correct their own teaching shortcomings. In addition, it can also discover students' personality problems and common problems, so that teachers can teach more pertinently. It is pushed to students before class through the teaching platform, which is convenient for preview and repeated watching after class. Teachers can monitor in real time through relevant platforms, and teachers and students can communicate online for the problems in the preview. After the exchange, the teacher revises the teaching design according to the learner's specific situation. [2] Design of student online learning activities. Before classroom teaching, teachers publish pre-class preview content and requirements through the network platform, and students are task-driven for online self-learning, watching videos and completing exercises. Teachers can use background statistics to supervise students' learning situation of watching videos, completion of exercises, discussion participation, etc. to give a comprehensive score.

In class: [1] Use the combination of blackboard writing and multimedia to enrich teaching methods. In terms of content, for creating realistic situation problems or typical problems, let excellent teachers record micro-class videos, interspersed with instructional design to enrich instructional design. [2] With the help of mobile devices, network platforms, etc. to realize multi-screen teaching, teachers can use the interactive feedback platform to grasp the dynamics of students in time, and students can use the feedback platform to ask more questions to the teacher. [3] After solving the problems identified before class, teachers can use the platform to assign new tasks and organize everyone to carry out inquiry learning in groups. [4] In online classroom testing, teachers use mobile terminals to push classroom exercises so that students can complete and submit them within the specified time limit. The system will automatically provide evaluation, analysis and statistics to fully reflect students' knowledge. Teachers provide targeted guidance to students based on the feedback results of the evaluation system and promote students' knowledge construction.

After class: [1] Teachers can set up WeChat or QQ groups in the teaching class to solve students' problems in real time. Those that cannot be solved in class can be solved in time using these tools. For tutoring and comments on subjective questions, feedback to students can be done by recording micro-classes. [2] Implement diversified assessment and evaluation for students. It consists of formative evaluation and summative evaluation, which respectively make a reasonable and comprehensive evaluation of students' learning attitudes and learning outcomes. Formative evaluation is carried out regularly during the teaching process to understand students' learning attitudes and learning conditions in real time; summative evaluation is carried out after teaching to check whether the teaching goals are achieved and evaluate the students' learning results. The evaluation of students' learning attitude is composed of attendance status, homework, degree of discussion participation, student mutual evaluation and online learning statistics. Attendance, homework, and discussion participation are counted by our school's class creation platform; student mutual evaluation can be realized by the mutual evaluation function; online learning micro-video statistics can also be directly counted in the background, and the teacher will give a reasonable score based on this. When evaluating the learning results, it can be carried out from the aspects of module testing, in-class questions, application development, final exams, etc. Online testing can be selected for module

testing. Application development takes the form of research reports or essays. The teacher assigns a comprehensive question for students to submit a essay, and the teacher comments. When asking questions in class, the questions will be given in the classroom. Students will send their answers to teachers via the Internet, and teachers will make comments. Students can understand their current knowledge of the current knowledge in time. Given the appropriate weight of each module, the student's learning achievement evaluation is obtained. Teachers can understand the student's learning progress and learning status in real time, and constantly adjust the proportion of each evaluation method to make the evaluation more reasonable.

Analysis of the effect of mixed teaching mode: The effect of this teaching mode can be evaluated from the teaching quality evaluation center, academic committee, curriculum center, teachers, and students, so as to provide references for subsequent teaching reforms. The supervising teachers of the evaluation center, the teachers of the branch committees, the course directors of the curriculum center, and the teachers of the center evaluate each other, and students fill in the course evaluation statistical form to feedback the teaching effect through listening to the lecture to provide reference for subsequent teaching improvement.

4.3. Stimulate Students' Active Learning and Deep Learning

Facing the massive amount of information in the information age, students should strengthen their deep learning ability, learn to think independently, and contemplate, accumulate, and internalize knowledge into their own cognition. Under the changes of this era, students establish the concept of lifelong learning, no matter whether it is work or study, they can adapt to the continuous changes in society. Arouse the enthusiasm and enthusiasm of students through learning support centers, workshops, clubs, etc.

4.4. Teacher Self-improvement and Learning

First of all, we must establish a renewed ideological consciousness, and establish a "student development as the center, student learning as the center, and learning effect as the center". Concept. Taking student development as the center: based on the current state of students, to promote their development as the purpose; to complete specific development tasks during adolescence; to explore students' potential and promote their own all-round development. Take student learning as the center: learning is the center of education; in all student activities, learning is the center. Focus on learning effects: Emphasize attention to learning effects; attach importance to measurement and feedback. Secondly, we must master modern education technology and learn to make full use of service teaching. Finally, teachers must learn for life and be good at reflection. Continue to summarize and correct in more frequent exchanges with students to better promote the reform of college classroom teaching.

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