Discussion on Rain Classroom Mixed Teaching of New Energy and Energy Saving Technology Teaching

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Abstract: Rain classroom plays an active role in promoting the reform of online and offline mixed teaching mode between teachers and students, and brings vitality and vigor to traditional classroom teaching. The application of rain classroom in Henan University of science and technology is still in the exploratory stage. This paper introduces the design and practical application of rain classroom in the teaching of new energy and energy-saving technology, aiming to provide reference for the exploration and construction of Hybrid Teaching Mode in Colleges and universities.

1. Introduction

The outline of national medium and long term education reform and development plan (2010-2020) and the ten-year development plan of education informatization (2011-2020) put forward the use of information technology to promote the development of education and teaching. With the Internet plus wave of the times, reform and innovation in teaching environment, teaching methods, teaching modes, teaching and scientific research in universities represent the general trend. The perfect integration of information technology and classroom teaching is blended learning, that is, the combination of e-learning and traditional learning, which can not only play the leading role of teachers in the classroom teaching process, but also highlight the initiative and enthusiasm of learners as the main learning body in the network learning, which has become a new direction of reform.

2. Introduction to Rain Class

Rain classroom is a new teaching tool developed by Tsinghua University and launched by the well-known MOOC platform "Xuetang online" in April 2016. Rain classroom can realize the organic connection between before class, during class and after class, and can provide teachers and students with relevant data of learning state and interactive platform between teachers and students. The use of rain classroom greatly improves the efficiency and effect of classroom teaching[1].

3. The Concrete Function of Rain Class

3.1 Customized Mooc Video Platform

After the rain classroom is installed successfully, it is integrated with the teacher's ppt. Teachers can make courseware before class, and insert MOOC video into ppt through "MOOCS video" or "network video" in rain class. The inserted MOOCS video can come from the school online, or from Youku, Tudou and Tencent video platforms. Teachers can record voice explanations on each page of PPT. After the PPT is completed, it can be uploaded to the students' wechat mobile terminal through rain class. Different from the popular MOOC platform in the past, the content of each session is arranged and organized by teachers according to the teaching content and students' learning situation, which avoids the embarrassment that students want to preview without knowing what to watch and how much to watch. Students do not need to find suitable preview materials in the vast video, which is more targeted and operable.

3.2 An Orderly Interactive Platform between Teachers, Students and Students

In class, after teachers and students log in to rain class by wechat, teachers can initiate limited time to discuss topics. When one student expresses his / her own opinion, other students can put forward his / her own point of view by sending a barrage, which can not only maintain the heat of the discussion, but also ensure the order of the class discussion. In addition, the use of bullet screen is very synchronous with the current network life of young people, which is in line with the use habits of students.

3.3 Data Platform of Students' Learning Effect

When teachers carefully prepare the explanation content and upload preview materials before class, the most worrying thing is that students can not make good use of these resources to achieve the ideal learning effect. Rain class makes up for the lack of data in the process of teaching management. Rain class can count the number and list of students' preview, the effect of students' preview, the problems students encounter in the process of preview, and the number of students who do not understand each knowledge point in the class. Through these statistical data, teachers can more intuitively grasp the students' learning situation, and can also urge the students' learning progress through these data[2].

4. Teaching Design of Rain Classroom in New Energy and Energy Saving Technology Course

New energy vehicle is the only way for China to move from a big automobile country to a powerful automobile country. As a new course of power engineering and Engineering Thermophysics, the importance of new energy and energy saving technology is increasingly prominent. Most of the professional courses in our school adopt the traditional classroom indoctrination teaching, lack of supervision mechanism, and it is difficult to realize the preview before class and review after class. Students have poor initiative, less classroom interaction, students dare not question and do not take the initiative to ask for advice when they encounter problems, which greatly reduces the teaching effect and solidifies the assessment method of ordinary achievement. In order to change the traditional teaching mode, we turn the "Teacher centered" teaching into a "Teacher centered and student centered" teaching mode. We introduce the rain classroom to integrate the face-to-face teaching between teachers and students with the Internet plus teaching, breaking the restrictions of time and place, and using the mobile phone in the students' hands to carry out situational teaching in the whole cycle[3].

This study takes the course of new energy and energy saving technology as an example to study the hybrid teaching mode of rain class and traditional classroom. The number of students participating in the course is 71. The location of the class is the multimedia classroom with wireless

network and rain classroom plug-ins. The effectiveness of the hybrid teaching is ensured in the operating environment, and the interaction and cooperation between teachers and students before, during and after class can be promoted. In order to promote students' initiative and active participation, the rain classroom is used to reform the mixed teaching mode. First of all, it is necessary to revise the syllabus in advance, adjust the proportion of usual grades and final grades appropriately, improve the proportion of ordinary grades, and stimulate the enthusiasm and initiative of students to participate in interaction. Secondly, the courseware of teaching preview and review can't copy the teaching courseware, but should be redesigned according to the analysis of teaching objectives and learning situation. Thirdly, we should improve other teaching resources, such as making micro class and MOOC videos according to the key and difficult points, or directly referring to the MOOC resources provided by the school cloud platform to enrich the teaching content, design classroom test questions and personalized homework in advance, and push the test timely according to the teaching progress.

5. Rain Classroom Teaching Practice

5.1 Preview Feedback Before Class, Real-Time Data Presentation

According to the specific requirements of learning objectives, the design of preview content and the analysis of learning situation are targeted. Push the micro lesson, MOOC resources and preview courseware with voice attached to the key points to the students in the rain class, and add video, voice and other materials. The content is not more refined, so as not to affect the enthusiasm of students' autonomous learning. Through the rain classroom platform to master the preview of students and feedback on difficult problems, online learning evaluation before class[4].

5.2 Three Dimensional Interaction in Class, Continuous Communication between Teachers and Students

5.2.1 Sort out the Problem and Determine the Problem

The students in the class are divided into groups to discuss the problems encountered in the preview before class, and the unsolvable problems are fed back to the teachers through the rain class platform. The teacher makes judgment on the preview before class, selects typical problems and explains them emphatically. Through rain class, teachers can master the first-hand information of students' preview, grasp the key and difficult points of the course from the students' level, sort out and determine the problems, and adjust the courseware. The platform increases the way for students to communicate with teachers before class, effectively uses fragmented learning time, increases students' learning initiative and enthusiasm, and is more conducive to the development of students' autonomous learning[5].

5.2.2 Creating Situations and Introducing New Courses

Teachers create learning situations and introduce teaching contents through preview feedback. Since the traditional interaction between teachers and students is reflected in the classroom, rain class solves the problem of asymmetric information between teachers and students before and after class. Teachers can adjust and supplement the course content through students' feedback before class, and carry out teaching design according to the problem of students' centralized feedback. In view of the problems, it is necessary to create a situation to effectively carry out more contemporary and interesting teaching activities[6].

5.2.3 Multi Screen Teaching and Learning

When teaching is started, students pay attention to the rain class and register to join the class with real name, which can scan the code or sign in with the class code, and receive the courseware synchronously, which solves the two problems of attendance roll call and students' lack of time to take notes, so that students can spend more time and energy on listening and thinking. At the same time, the interaction between teachers and students can be carried out through contribution and bullet screen functions. Students can also mark "don't understand" (as shown in Figure 2) or "collection" to facilitate review after class. At the same time, relevant data can also be synchronously displayed on the teacher side. Rain class eliminates students' concerns about not asking questions in person, and adds interactive means. Teachers can grasp students' feedback questions and answer them in real time, focusing on explaining problems encountered in preview and class and key and difficult points of the course. At the same time, the courseware received by students is convenient for review at any time after class. Teaching and learning are no longer confined to the traditional classroom, blackboard or PowerPoint. They can learn at any time and anywhere. The means are more open, more modern and more information-based, and the communication and interaction are more real-time and convenient[7].

5.2.4 Classroom Test Helps Formative Assessment

Teachers push test questions through rain classroom platform, and students receive test questions and submit them. The evaluation system of rain classroom platform timely feeds back the big data of test results to teachers, so that teachers can master the situation of students' answers and the number of answering questions of each option, and then analyze and explain the causes of errors one by one. At the same time, teachers can send red envelopes to the students who answer questions quickly and well, which can effectively stimulate students' interest in learning and mobilize their learning enthusiasm. Teachers can also use random roll call in classroom questioning to urge students to actively participate in interaction and active learning. The above class data will be included in the student assessment system as usual scores, providing effective support for formative assessment.

5.2.5 Classroom Real Time Comment Summary after Class Strengthen Monitoring

Based on the data analysis of the platform, teachers make comments according to the feedback results to master the students' real-time learning effect. Especially for the explanation of subjective questions, we can use the screen function of students to submit answers to elaborate the error prone points and analyze the reasons, and analyze the learning results. At the same time, after class, we can download the course summary materials through the summary after class and log in the website version of rain class to understand the status of students and strengthen the process monitoring. After class summary is to count the data of students' autonomous learning process and teachers' classroom links. Through big data analysis, teachers can understand each student's learning progress and weak links in learning, and timely adjust courseware and progress according to the data analysis results, so as to achieve better results and form a virtuous circle in the teaching process.

5.3 After Class Personality Guidance, Taking into Account the Differences of Students

Through the summary of rain class, we can know the list of excellent students and "early warning" students in this class, push personalized review resources according to the individual differences of students, and release targeted homework. After students complete the homework, the teacher platform will receive the students' answers. The teacher comments on the correction, and

then gives feedback to the students in the form of group notice, attachments and web articles. This personalized tutoring method is more efficient, intuitive and fast. Students can check the homework situation in time, communicate with teachers online, correct homework, summarize and reflect. Teachers can manage class courseware, question bank and test paper anytime and anywhere, send preview and review materials, master students' autonomous learning situation, build a bridge of communication between teachers and students after class, so as to make teachers and students interact No longer rigid in the classroom[8].

6. Conclusion

The hybrid teaching method based on rain classroom is the result of the joint development of network technology and teaching method. The hybrid teaching method combines the advantages of network resources and classroom teaching, and greatly promotes the development of modern education and teaching. At the same time, teachers are required to think about how to explain knowledge points, how to organize students' interaction, how to pay attention to students' learning needs, and establish a good teaching and learning order. The network impacts each kind of traditional industry, but also brings more high-quality resources. The effective use of rain classroom network platform can absorb high-quality resources and give full play to teachers' teaching characteristics. Therefore, the combination of rain classroom and teacher teaching is in line with the teaching law. The combination of rain class and students' learning is the key method to cultivate students' lifelong learning ability. The application of rain classroom makes classroom teaching more efficient, targeted and extensible.

Acknowledgement

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