Research on the Teaching of Higher Mathematics Based on Rain Classroom

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Abstract

Higher Mathematics is an important basic theory course for science and engineering majors in Colleges and universities. Because of its many concepts and flexible analysis methods, the teaching effect has been unsatisfactory. In order to explore more effective teaching methods, this intelligent teaching tool-Rain Classroom, has been used to carry out the practice of online and offline hybrid teaching mode, which has achieved good results and provided a reference for the future application of Rain Classroom in other courses.

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Keywords: Rain classroom; Mobile terminal; Intelligent teaching; Hybrid Teaching

1 Introduction

“Rain Classroom” is a free intelligent teaching tool developed by School Online and Tsinghua University Online Education Office. It integrates complex information technology into power point, covering every teaching link before class and after class. By using the data statistics function of the whole cycle of “Rain Classroom”, teachers can acquire the students’ learning trajectory in any link of teaching in real time, so as to adjust the teaching content in time and deploy the intelligent classroom quickly. At present, “Rain Classroom”
Zhixia Huang has been released in version 3.0, which adds a full-cycle curriculum package of subjective questions and wisdom teaching, with more abundant content. It provides an effective solution to the problems of single form, poor interaction and dull content of theoretical teaching of professional basic courses.

2 Problems in Teaching Advanced Mathematics

2.1 “Internet +” education reform needs

In 2015, the state put forward the strategy of “Internet +”. With the massive increase of mobile Internet users, “Internet +” has entered the latest stage of “mobile Internet +” from “Internet +”, which has also had a tremendous impact and impact on higher education.

2.2 The teaching difficulties of Higher Mathematics

Higher Mathematics is an important basic theoretical course for science and engineering majors in Colleges and universities. The research object of this course is function (the dependence of quantity in the process of change). The teaching contents include function, limit, continuity, calculus of one-variable function, vector algebra and space analytic geometry, differential of multivariate function, integral of multivariate function, infinite series and ordinary differential equation, etc. The course is basic and theoretical, and closely related to the study of related courses. It is a subject of the National Master’s Entrance Examination, which is related to the cultivation of students’ comprehensive ability. In terms of curriculum content, there is a contradiction between teaching content and limited class hours, which brings difficulties to teaching.

2.3 The lack of classroom teaching means

The traditional teaching method of theory is to help students learn through some examples on the basis of explaining basic concepts and theorems. Some teachers teach on the basis of textbooks, continuing the exam-oriented education model, teaching content can not keep pace with the times, teaching methods are relatively single.
3 Exploration of “Rain Classroom” Mixed Teaching

In the course of Higher Mathematics of a certain professional student of grade 18, a pilot project was carried out to carry out the practice of online and offline hybrid teaching mode by using “Rain Classroom”, which has gained good repercussions among students. The main methods are as follows:

3.1 Pre-class preparation

Before class, teachers make preview courseware, which can insert lecture notes, test papers, MOOC videos and Youku, Tudou and Tencent videos online in the school, and combine them into their own teaching programs. Teachers can also add voice to give specific reminders or guidance. After the preview handouts are sent, teachers can receive feedback from students on their learning situation. Through pre-class preview, students will have a perceptual understanding of the new knowledge to be learned, and teachers can change the teaching design according to the feedback of students in the preview.

3.2 Interactive link in class

In class, the teacher will automatically generate the two-dimensional code of the course after the beginning of the course, and the students will enter the class by “sweeping” through wechat. The PPT taught by the teacher will be sent to the students’ mobile phone in real time, which is convenient for students to review after class. The buttons of “Collection” and “Understanding” are set at the bottom of each page of PPT to help students record the knowledge points that they do not fully understand in class. At the same time, teachers will receive feedback from the number of “Understanding” people, so as to facilitate teachers to adjust the teaching content and rhythm in time. Teachers can also issue questions and test papers in class, and set the answer time to check students’ answers in real time. “Rain Classroom” has also set up the function of bullet curtain. Teachers can control the opening and closing of the bullet curtain and increase the interaction with students.

3.3 Summary after class

After class, “Rain Classroom” provides a comprehensive data analysis function. All the data of students’ learning behavior from pre-class to class are collected automatically and completely. Teachers can obtain data analysis of students’ learning situation. Detailed information of each student can be sent to teachers by mail to help teachers grasp students’ learning trajectory and
solve the problem that students’ learning can not be quantitatively controlled and judged in the past. The problem of the situation.

3.4 Students use feedback

At the end of the semester, a questionnaire was issued to the pilot class through the “Questionnaire Star” platform. Of the 115 students who participated in the survey, 104 (about 90) preferred the “Rain Classroom” teaching method and hoped to continue using the “Rain Classroom” teaching method in the future.

4 Problems and Solutions in Using Rain Classroom

4.1 Main problems

(1) Students use mobile phones improperly. Some unconscious students will pay attention to places other than learning, such as brushing circles of friends, playing games and so on, which has a negative impact on other students who are serious about learning.

(2) The authenticity of sweeping check-in link. Students have encountered the phenomenon of sending two-dimensional code or classroom code to the students who did not come to class for check-in, which has brought some problems to the statistics of classroom attendance.

(3) Less video resources. At present, there are fewer free and open video resources, and there is a lack of available high-quality video in making offline learning materials such as preview courseware or extra-curricular supplementary knowledge courseware.

4.2 Solution suggestions

(1) For the frequent use of mobile phones by students, on the one hand, teachers should make good guidance and formulate reward and punishment mechanisms; on the other hand, more efforts should be made to introduce vivid and participatory content, such as some interactive questions and time-limited answers, in the setting of teaching content.

(2) For the authenticity of the check-in link, the random roll-call function of “Rain Classroom” version 3.0, combined with time-limited answers and classroom tests, can be alleviated to a certain extent.

(3) For the lack of resources, on the one hand, we hope that schools can open more resources online for sharing, on the other hand, we can also recommend some high-quality curriculum videos to teachers through links.
5 Conclusion

Introducing “Rain Classroom” into the teaching of Higher Mathematics course, using the functions of its mobile terminal, combining online and offline organically, changing the traditional “one-way” teaching knowledge into “two-way” learning, strengthening the interaction between teachers and students, and using the function of “Rain Classroom” big data analysis, quantifying and intuitive data and graphs, reflecting students in real time. Learning situation makes it possible for teachers to deploy smart classes quickly. As a wisdom teaching tool, “Rain Classroom” provides teachers with a new type of Internet Teaching means. However, how to set up the curriculum content, master the curriculum rhythm and arouse students’ interest in learning still needs teachers to keep pace with the times and improve and update according to the goal of talent training.

References


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