The Construction and Research of College Mathematics Process Learning Teaching System

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Abstract: With the development of information education, the network of university campuses has also developed rapidly. Unrestricted traffic is used anytime and anywhere on campus. On the one hand, it facilitates the office information of schools; on the other hand, it challenges the new teaching mode. How to guide students to use the Internet effectively for learning has become a new topic in university education. In the rain classroom, new teaching methods such as MOOC are involved in classroom teaching, and university process learning is also an important part of teaching reform. This paper introduces the exploration and practice of the teaching system of procedural learning in the university mathematics public class in recent years.

1. Introduction

The rapid development of network information and the acceleration of mobile phone renewal have not only affected the normal life of middle school students, but also delayed the professional courses of college students. Especially for college students who just entered the school, they are full of temptations. Lost the direction of learning, fascinated with mobile computer games, and in college, the increase in the network and speed of the network, providing college students with the convenience of online games. College mathematics in every engineering college is the most important compulsory course for college students. Only University of Jinan has more than 500 students who can't get a diploma because they fail in college mathematics every year. Because the study of college mathematics is a gradual process, it is not a discipline that can pass the final exam in a few days. How to correctly guide students to use rapid online learning of university mathematics, how to strengthen the construction of educational infrastructure with strong network information technology, so that teaching and learning are not limited by time, place and space, and use a powerful network teaching platform to effectively The implementation of college mathematics teaching has become an urgent issue for college mathematics educators.

Because the traditional mathematics teaching neglects the ordinary students' study and assessment, the final exam is a hammer sale for students' academic assessment. The classroom teaching is still a teacher-led full-fledged mode, which leads to the lack of motivation for students to actively learn. The phenomenon of surprise study at the end of the exam is more serious. This kind of centralized assault learning, on the one hand, prevents students from deeply understanding and mastering the basic knowledge of the courses they are learning. At the same time, as a logical and related mathematics course, many students are hard to strengthen in the weeks before the test. After passing the exam, I can pass the exam successfully. Among all the courses in colleges and universities, the college mathematics public courses are well-known courses with the highest rate of "hanging rate" and the highest proportion of re-training. In order to solve the difficult problem of college mathematics learning, it is to create a "double-class" University of Jinan and strengthen the ability of college students to actively learn. Since 2014, University of Jinan's school-level leaders, several college leaders and teachers have addressed A series of investigations and studies were carried out to realize intelligent online exercises and exams. The teachers of the project team and the software development company cooperated to create the mathematics Micro Spark.
teaching platform of University of Jinan. Using his own summer and winter vacations, he worked hard to screen the questions and build a question bank for Linear Algebra.

2. Construction and Gradual Improvement of the Micro Spark Teaching Platform

In 2014, we first established the platform of the "linear algebra" online teaching system, which is divided into the Micro Spark teaching platform of University of Jinan the teacher and the Micro Spark teaching platform - the student side. The teacher enters the Micro Spark teaching platform according to his own account. For: basic information management; test question bank management; job management and score management. The project team teacher introduces the class name and student ID number, which is consistent with the student information of the Academic Affairs Office. In each process test, once the candidate enters his or her own examination system, the name and photo are displayed on the computer at the same time, avoiding the possibility of cheating. Teachers first set their own passwords in basic information management to prevent leaks during exams. With regard to student management and class management, teachers must associate their classes here, and the teachers can easily publish their own generated test questions for each student while they are teaching. Only those students who join the association can see it. Published topic exercises. Micro Spark teaching platform - student side, subordinate directory is divided into: homework; exam; knowledge points; After each session, there are online homework exercises. Once the release time is over, students will be able to see their practice scores and analysis of the wrong questions, so as to deepen their understanding of the college mathematics curriculum. The key to the implementation of the whole Micro Spark teaching platform system is the soundness of various subjects. The input of the topic is a cumbersome process. The perfection of the topic and the guarantee of correctness are the tasks. We completed the construction of the question database of Linear Algebra in 2015. And successfully used for three years, to achieve the test error zero error, teachers can freely according to their progress schedule according to the established template, form chapter test questions, and publish the topic exercises, students according to their own time, generally set two practice opportunities, set the highest score each time to register. Regarding "Linear Algebra", we first piloted the freshmen of the 2014-level college, and then promoted to the school to implement the "linear algebra" network process test. The practice of the micro-Singapore College mathematics teaching platform in the past three years proves that the students' comprehensive evaluation results at the end of the period have been significantly improved, especially the hanging rate of the school's "linear algebra" has been decreasing, from the 2014 level of the college students "linear Algebra's hanging rate is about 24.53%, and the rate of hanging students to 2016 students drops to about 9.42%. It not only solves the problem of college students' mathematics learning, but also cultivates the good habits of college students' active learning, which is helpful for the follow-up of professional courses.

"Advanced Mathematics" is a lesson for college students. It even rumors that "hanging on "high numbers" and dying under "high numbers", freshmen will be advised by their sisters when they enter school. Study "Advanced Mathematics" well, but freshmen are easy to escape the pressure to go to school, and face the temptation of various associations. Often, there are more "high numbers" and some 40 students (especially good). There are nearly 30 people who fail the class. Of course, they can't separate from the class style. The normal class usually has 2-3 people failing. In order to strengthen the study of the high school students' high-level courses and effectively use the campus network, since 2016, our project team teachers and software development companies have begun to build the "Advanced Mathematics" test bank. Due to the short time, many contents, the topic Accuracy is less than 100%, so our College of Public Courses only conducts the chapter operation and procedural test of the Micro Spark teaching platform for the 2018 freshmen of the School of Electrical Engineering. The final grade of the 2018 electrical major is significantly higher than other profession.

In the summer of 2019, our project team members are working on the construction of the "Probability Theory and Mathematical Statistics" question bank, and piloting a college, and
gradually develop a teaching model of network procedural learning for all college mathematics courses at various colleges of University of Jinan.

The school leaders strongly supported the construction of the Micro Spark teaching platform and solved the hardware problems of the computer. Two large classrooms were specially approved, and a new computer was arranged. The college mathematics teaching and research section was specially arranged to arrange online mathematics online procedural examinations. The perfect configuration of the hardware enables the teacher to make appointments for the college's mathematical process test at any time according to his own teaching progress, so as to avoid the unified arrangement of the examination room for the whole school and the implementation of large-scale examinations. Make phased network exams unrestricted by time.

3. The Effect of the Implementation of the Mathematics Micro Spark Teaching Platform

Form a good habit of freshman self-study. The Micro Spark network platform can be used to organize the staged examinations of each course to prevent cheating. The staged examination can truly reflect the students' normal learning status. The project team is responsible for the teacher to generate the test template. Other teachers only need to open the template to generate the test paper. Because all the generated test paper templates are the same, the number of topics included in each knowledge point is difficult to select, which is the same difficulty level. The class teacher only needs to generate 6-8 sets of test questions on the original template. The system automatically disturbs the test sequence during the test, and the choice of the multiple-choice questions are changing, so that each student's questions before and after, even if they encounter the same copy. Papers, but the choices are changing. After the student enters his or her student number on the computer before answering the question, the computer should be able to display the student's information and photos. In the system, the test time is also designed. Once the test is over, the system will automatically close. This will avoid the phenomenon of students copying each other and doing other questions during the test. Because the difficulty of the test questions is the same, the fairness of the test results is guaranteed. Due to the high scores of the final scores of the procedural exams, students pay special attention to the results of each process test.

Using the Micro Spark network teaching platform, teachers can post exercises after each class. The number of exercises after the session is not too much. The time can be limited to 20-30 minutes. After the online practice is completed, the teacher checks the students online. The learning situation, in order to review the previous section of knowledge before the next class. Students must complete the online practice homework according to the time, and they have the usual grades. It is the teacher's comment before the next class. Therefore, the students take online assignments seriously, so that students can feel the urgency of studying college mathematics at all times and improve the process of mathematics learning. The quality, invisibly improve the students' initiative in learning college mathematics, and change "I want to learn" as "I want to learn." The key is to cultivate a good habit of college students to learn actively.

Liberated teachers and changed the traditional way of correcting assignments. The mathematics teaching of public courses in colleges generally consists of four classes. Each teacher has at least four classes or eight classes of mathematics. One teacher must correct at least four class assignments, and must also make correction records to give students the results. Is a very large workload. Using the Micro Spark network teaching platform, practice online after each section of the festival, the computer gives online practice results, fair and just. It enables teachers to understand the learning situation of students more quickly and accurately, and it is also to liberate teachers from a lot of homework. The Micro Spark network teaching platform has a performance analysis function, which is convenient for performance management, so that teachers can grasp the individual differences of students and provide targeted counseling to students. After the student submits the unit test paper or the simulation test exercise, the system must automatically generate the class test score analysis table, and the test score students and teachers cannot change it. The submitted test volume should also be saved in the system for summary at the end of the period.
Scientific and reasonable evaluation methods. Study design and reasonable performance evaluation methods. According to the proportion of test knowledge points in each stage, set the proportion of final grades in each chapter; study design online homework exercises, staged tests and classroom performance, and finally the percentage of total scores in the final exam scores. In order to form a scientific and effective curriculum process learning evaluation system to stimulate students' enthusiasm for learning.

4. Development Prospects of the Micro Spark Teaching Platform

The successful pilot of the Micro Spark teaching platform in the college mathematics public class will be extended to the study of other professional courses, so that our university will fully create the network process learning of each course, change the traditional learning mode of college students, and improve the university. The teaching effect of the classroom, to create a first-class college mathematics teaching system, truly accelerate the construction of first-class universities and first-class disciplines, and realize the connotative development of higher education!

References

