

Teaching Reform and Research on "Automatic Control Principles" based on MOOC

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Abstract

In order to improve classroom efficiency, MOOC-based course reform is carried out, and mixed mode teaching is used to organically combine traditional teaching and online learning, so to improve students' learning enthusiasm significantly, and the teaching effect is good.

Keywords

MOOC; Mixed Teaching; Autonomous Learning.

1. Introduction

As a technical (application theory) discipline, the research object of automatic control theory is automatic control system. The central issue is the dynamic law of the control process. The main content is mathematical model, engineering analysis calculation method and general law of the system. It is a comprehensive subject with a strong theoretical nature, with tedious mathematical derivation, complicated drawing theory and mathematical calculations. Combining with the characteristics and laws of this course, from the perspective of mixed teaching, we explored the teaching methods and means of "Automatic Control Principles", So as to give play to the leading role of teachers, and to meet the needs of students' autonomous learning.

2. Internet++ MOOC Teaching Mode

As a brand-new online teaching model, MOOC integrates with different educational concepts and learning methods. It has become an opportunity for reform and innovation of the teaching and learning model, which is obviously different from traditional courses or video classrooms. Its characteristics are mainly manifested as: it is open and free; it is object-oriented personalized independent learning; high learning freedom, and so on; a complete course structure can meet the systematic learning of students; learning analysis based on big data, through online homework and the test, accurately grasp the learning status. The "Automatic Control Principles" involves the basic knowledge of multiple courses such as circuit theory, analog electronic technology, motors, complex variable functions, Laplace transform and calculus. The knowledge covers a wide range, rich content, strong theory, abstract concepts, many exercises, so the students always feel difficult. In order to serve students, let them better understand professional theoretical knowledge, and make this course achieve the ideal teaching effect, a mixed teaching method based on the MOOC "Automatic Control Principle" is proposed.

The MOOC-based mixed teaching mode of the automatic control principle is to combine the MOOC teaching mode with the traditional learning method. By constructing a network teaching platform for the automatic control principle, the traditional "teaching first and then learning" is turned to "first learning and then teaching". Of course, this teaching mode is not simply a combination of face-to-face and online, but through video self-learning, student classroom discussion and practice, and teacher guidance and evaluation. First of all, teachers carefully

design and prepare related teaching videos, courseware, task lists and various teaching resources around the teaching goals of automatic control principles, so that students can carry out targeted learning based on their own foundations, and solve the problem of teachers repeating basic teaching content. The problem is to reduce the burden of teachers in teaching; secondly, to realize the transformation from "teaching" as the center to "learning" as the center in the teaching process. In classroom practice, teachers need to guide students to carry out operation and practice, which is student-centered education. Students use small learning teams to obtain individual tutoring from teachers, encourage peer learning, plus a small amount of self-study; finally, teachers can focus on teaching guidance and answering questions, improving students' thinking and innovation ability, and students can follow their own Learning characteristics, repeated learning of teaching resources, and continuous improvement of learning effects.

3. Mixed Teaching Method Analysis of "Automatic Control Principles" based on MOOC

3.1. Advantages of Mixed Teaching Method

(a) Because the teaching schedule is limit, students' learning habits and the teaching methods reform is insufficient, Student-centered teaching and learning methods such as filling the classroom and filling ducks teaching are continuing. Students cannot improve their independent learning ability, and interactive discussions are more difficult. The mixed teaching method based on MOOC of "automatic control principle", the domestic teaching reform "student as the main body, teacher as the leading" is finally implemented, which can not only play the leading role of teachers, but also meet the needs of students for independent learning. Using the SPOC platform, students have more free time and space in learning, and can arrange and control their own learning according to their own situation.

(b) Increase the Interactivity of Teaching

The mixed teaching combined with SPOC and flipped classrooms enhances the interaction of the classroom in an all-round way, which is specifically manifested between teachers and students and between students and students, rather than relying on teachers as the only disseminators of knowledge.

Students need to use MOOC resources outside of class to preview according to the task list given by the teacher, and they need to summarize the areas that they do not understand and have doubts about the MOOC resources, and then submit the questions online. In the classroom, the teacher will give targeted lectures and assign homework. Students will conduct their own research in the form of groups. Students will learn from each other and learn from each other. Teachers will also have the opportunity to understand the interaction between students. At the same time, the role of the teacher has changed from the presenter of the content to the assistant of learning. The teacher has time to talk with the students, answer their questions, participate in the study group, and guide each student in time. In this learning process, students begin to realize that the teacher is guiding their learning, not just the teacher issuing instructions. The teacher's goal is to make them real learners and understand the content of the course. When teachers and students overcome various learning difficulties they encounter, students will respond with their best actions.

(c) Grasp the Learning Progress

The Spoc Platform Provides Real-Time Learning Habits, learning activity, PPT viewing status and test completion status of each student, and an online forum with good interactivity. Teachers can understand the learning situation and teaching effect, and adjust the teaching process in time through student feedback.

3.2. The Insufficiency of Mixed Teaching Method of “Automatic Control Principles” based on MOOC

(a) Students' Autonomous Learning is Weak

Under the mixed teaching mode, students concentrate on learning and discussion, and complete corresponding learning tasks through the Internet alone. It is particularly important for students to have clear learning needs, strong self-control and self-learning capabilities, and active learning. However, the students themselves are quite different, especially for the students who are from private colleges; the development of mixed education of "automatic control principle" is very difficult. For students with weak learning acceptance ability, MOOC cannot provide sufficient learning guidance and help.

(b) Teaching Design is Difficult

The teaching link constitutes a closed-loop system in the time domain, combining the actual situation of the students, and each link has its own responsibilities and has its teaching goals. Teachers need to carry out the functional positioning according to the students' situation, and cultivate students' knowledge mining ability, summarizing ability and knowledge application ability. Therefore, the task list design should be as detailed as possible to improve the acceptance of students and focus on guidance.

As a new teaching method, the mixed teaching method based on MOOC has advantages and disadvantages. The “Automatic Control Principle” itself focuses on analysis. The advantages of teaching with MOOC resources far outweigh the disadvantages. It will definitely have a profound impact on the teaching of the automatic control principle course.

4. Suggestions on the Mixed Teaching Reform of “Automatic Control Principles” based on MOOC

The mixed teaching model based on Internet + MOOC puts forward higher requirements for teachers' professional level. Firstly, teachers should provide students with diversified learning materials, including networked teacher classroom multimedia teaching PPT lecture notes, networked teacher teaching videos, online quizzes and other learning resources for students to watch online or download them on their own computers. For self-review or for students who are unable to attend class this time to make up their own lessons.

Secondly, teachers need to participate in relevant technical training to improve the application skills and business capabilities of professional software.

The automatic control principle course mainly examines the students' ability to analyze and apply the performance of the control system. Under the mixed teaching mode, the performance inspection is no longer the final test paper test, but emphasizes the effectiveness of online learning and independent learning ability. The final assessment results are composed of the number of studies logged on the platform, the number of postings, group discussions and reports, homework results, and final closed-book exam results.

MOOC cannot completely solve the problems faced in the current teaching process, nor can it completely replace traditional education. However, if in the teaching of automatic control principles, we can combine the advantages of MOOC teaching according to the course characteristics, it will not only help promote student learning, but also can improve classroom teaching effect and teaching quality.

5. Conclusion

The MOOC teaching of "Automatic Control Principles" will be imperative. College teachers need to seriously study the impact and challenges of the Internet + MOOC on current education, and

think about how to apply it in our own classroom to improve the students' enthusiasm and creativity, so to promote the improvement of teaching quality.

References

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