

Application of Online and Offline Mixed Teaching Mode in Single – chip Microcomputer Teaching

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Abstract: With the rapid development of information technology, the traditional offline teaching model has been unable to meet the learning needs of students, and the classroom time is limited, and the teaching efficiency under the traditional teaching model is not high. If only relying on online courses, students can learn independently through MOOC courses, it is also difficult to achieve the goal of single–chip course training, and students have insufficient practical skills. Therefore, the online and offline hybrid teaching model is of great significance in practical courses such as single – chip microcomputers. Teachers are required to effectively integrate online and offline resources to help students gain knowledge.

Keywords: Online and Offline Hybrid Teaching; Single–chip Microcomputer Teaching; College Teaching

The SCM course is highly practical. It not only requires students to have a firm grasp of the basic knowledge, knowledge and understanding of SCM, but also requires students to have practical skills, understand how to use SCM, and debug and design SCM. Therefore, it is necessary to explore efficient teaching methods in course teaching-online and offline hybrid teaching models help students lay a solid foundation. On the one hand, they can effectively integrate online resources to help students establish a preliminary understanding and master basic knowledge; on the other hand, use limited In class time, students are given practical training to exercise their hands—on practical ability.

1. Current situation of single–chip microcomputer teaching in colleges

In the process of teaching in colleges and universities, there are mainly two teaching modes, online teaching and offline teaching. Online teaching generally requires students to complete the corresponding courses in the MOOC, complete the corresponding assessments and homework, and finally score the courses based on the students' scores in the platform. However, online learning alone has many shortcomings for practical courses such as single–chip microcomputers. The students' understanding of single–chip microcomputers only stays at the theoretical level, lack of practice, and fail to realize the design and debugging of single–chip microcomputer courses teaching objectives. In the offline teaching process, teachers generally give priority to lectures, and some courses will be selected for practical training to help students combine theoretical knowledge with practice. However, class time is limited. If teachers explain every aspect of knowledge, a lot of time will be wasted. At the same time, some of the content may allow students to learn independently through online courses, which will improve efficiency.

Therefore, it is difficult to achieve the ideal teaching effect by only using online or offline teaching mode. Teachers should explore the combination of online and offline teaching mode in the process of single – chip teaching, and make full use of online resources to help students learn independently and efficiently. Use class time to help students master practical skills.

2. Application of online and offline hybrid teaching mode

The online and offline hybrid teaching mode means that teachers can clarify the important and difficult points and divide the teaching content reasonably according to the curriculum content of the single-chip microcomputer. On the one hand, they can help students master some basic knowledge through their own production or collection of high-quality online resources; The next teaching focuses on the training of students' practical operations, helps students exercise their practical ability, and achieves the teaching goals of the single-chip course.

2.1 Reasonable division of teaching content

The first step in adopting the online and offline hybrid teaching model is to deeply analyze the teaching content of the textbook, clarify the teaching objectives, and divide the teaching content reasonably. Some content students can learn independently through online resources, and other important and difficult points can be carried out offline by teachers. Explain further to help students deepen their understanding. In the MCU course, some of the basic concepts and extensions can be used by teachers as pre-class preview content and explained by video. Students can complete the study within about half an hour before class. Students' independent study and preview of simple content can help teachers speed up the progress of classroom teaching and spend more time in explaining important and difficult points. For practical design and debugging content, teachers can take out several offline courses as practical training courses to help students get in touch with and use single-chip microcomputers.

2.2 Independent learning of online course resources

In the Internet age, with the rapid development of information technology, there are abundant teaching resources on the Internet. There are many high-quality videos explained by famous teachers, and some creative knowledge videos produced by bloggers. Teachers can collect some high-quality teaching videos on the Internet and integrate them when teaching on single-chip microcomputers, so that students can learn and watch them. On the other hand, teachers can also take the method of self-recording, make some small knowledge points and extended content into small videos, and send them to the class group for students to learn.

Online teaching mode can play a greater role in the teaching process of teachers. On the one hand, teachers can use online resources to assign students some pre-class preparation and learning tasks; on the other hand, teachers can test students through online tests. Whether you have a firm grasp of knowledge. Therefore, teachers can make some pre-class preview videos according to the teaching objectives before learning the content of each chapter, and put some basic concepts and other relatively simple knowledge in the video to explain, so that students can learn independently. In addition, teachers can also choose some high-quality teaching resources in the MOOC, and select certain videos to require students to learn independently. In this way, it can speed up the teacher's teaching progress in the classroom, and at the same time, the pre-class preview can help students better keep up with the speed of the teacher's explanation. In order to test the efficiency of students' self-preparation and learning, teachers can simply set up some questions after each preview and learning video to understand the students' mastery of knowledge and difficulties encountered. Finally, after the completion of each chapter, the teacher can also set up corresponding test questions online to understand the recent learning status of the students. Through the analysis of the scores and test results, the students will be explained again to the knowledge points that the students have lacked, so as to help the students to repeatedly consolidate and lay a solid foundation.

2.3 Interaction between teachers and students in offline practical courses

In the process of offline teaching, teachers should make full use of the opportunity of face-to-face communication with students to help students further learn the relevant knowledge of MCU.

First, the teacher can explain the confusion that exists after the students have gone through online learning, and second, the teacher should further explain the important and difficult points in the MCU course. After each chapter test, the teacher should analyze the test results in time and explain the common and easy points of the students. In this process, in order to achieve a good interaction with students, teachers can take random

questions or rush answers to test students' mastery of some content. In order to better improve students' enthusiasm, teachers can also adopt a scoring system. Class performance is included as part of the final course grade. In this process, teachers should pay attention to the students who speak less, and give them some opportunities to speak, so that every student can participate in the classroom.

Secondly, for the use and debugging of the single-chip microcomputer, teachers may need to use the existing resources of the school to provide students with physical objects. At the same time, teachers can also design and collect some related application cases closely related to single-chip microcomputers for further explanation in the classroom to help students understand the application scenarios of single-chip microcomputers more deeply.

Finally, in order to test the effect of students' course learning, teachers can arrange a course design with the theme of "Single-chip Microcomputer Design and Debugging", and students can freely form a team to complete the course design. Students need to combine the content and knowledge learned in the class, choose a practical application scenario, analyze the type of MCU required by the scene, design a suitable MCU for it and analyze the degree of suitability, and form a complete written report. The teacher first needs to pay close attention to the progress of each group in the design process of each group. If there are problems, they need to guide the group members in time, and try to solve the problems through the students' own thinking. Secondly, it is necessary to carefully review the curriculum design of each group, point out its strengths and weaknesses, and help students make further improvements. After the course design process is over, teachers can select group assignments with a high degree of completion and clear thinking to pass through each other in the class, and at the same time encourage communication between groups to understand and learn from the strengths of other groups.

3. Conclusion

Both online and offline teaching models have their own advantages and disadvantages. When teachers use only one method to teach practical courses such as single-chip microcomputers, the disadvantages will gradually appear. Therefore, teachers should effectively combine the online and offline teaching modes, reasonably divide the content in the textbook, and use online resources to help students conduct self-preparation before class and post-class evaluation, and provide timely feedback to the teacher on the learning process. There are doubts in the process; use offline teaching to achieve efficient interaction with students, explain the important and difficult points again, and arrange curriculum design to help students effectively combine theoretical knowledge with practice. Teachers need to constantly adjust and improve the online and offline hybrid teaching mode according to the actual situation of the class to improve teaching efficiency.

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