

Research on Online and Offline Mixed Teaching of Single Chip Microcomputer Application Practice Course

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Abstract: With diversified advantages, the online and offline hybrid teaching mode has been widely used in professional teaching, and highly recognized and praised by educators. Fully integrating the online and offline hybrid teaching mode with the SCM application practice course can ensure that the designed online teaching resources have high feedback, hierarchical and professional characteristics in combination with the characteristics and interest needs of students' actual learning, improve the offline teaching quality by means of group discussion and team cooperation, and properly solve the problems existing in the online and offline hybrid teaching mode at the level of poor connection and insufficient resource utilization. On this basis, from a diversified perspective, it's better to give full play to the advantages of online and offline mixed teaching mode to stimulate students' interest in learning and improve students' subjective initiative. Therefore, this paper makes a detailed analysis of the teaching approach of online and offline mixed teaching mode in the SCM application practice course, which lays a solid foundation for further improving students' sense of teamwork and teaching effect.

1. Introduction

In the context of the continuous improvement of China's modern education level and the comprehensive deepening of educational reform, the diversified characteristics of the student source environment are more and more obvious, and students have more initiative in this teaching environment, be able to easily use various learning methods, master the teaching content designed by teachers, and improve their acceptance ability. Therefore, teachers should start from the ideological level, give correct recognition and high attention to the importance of "Internet plus" in improving students' comprehensive quality, and strengthen the flexible application of online and offline hybrid teaching mode from the action level. In the practical application teaching of single chip microcomputer, the online and offline mixed teaching mode can completely break the constraints of traditional teaching at the time and space levels. With the help of online teaching resources, it can create a teaching environment with high certainty and professionalism for students, stimulate students' enthusiasm for learning. At the same time, it puts forward stricter requirements for students' learning ability, requiring students to use their spare time to complete the teaching

tasks set by teachers with the help of the teaching platform, brings the problems and doubts existing in online learning to the offline. By consulting teachers or other students and studying in groups, the relevant problems can be properly solved. While improving the cohesion between online and offline teaching, teachers will focus on strengthening students' learning ability.

2. Online Resource Design

2.1 Design Project Scheme

In the process of leading students to learn the relevant knowledge content of “design and implementation of fancy neon lights”, teachers can divide the project content into three task modules to understand the single chip microcomputer, flashing neon lights, hardware design and software design. Students are required to fully grasp the knowledge and ability objectives of each task on the basis of a clear understanding of the learning tasks, so that students can take the initiative to carry out self-assessment after completing the tasks. In the process of designing the project scheme, teachers should carry out the project from both online and offline aspects. With the help of online resources, teachers should provide assistance for students to preview and review before and after class, upload tasks, assignments, micro lessons, videos, animations, knowledge points, PPT and other forms to the teaching platform, and provide diversified choices for students to carry out online preview and offline review. In the process of offline learning, teachers should combine students' actual learning effects, use feedback, evaluation and interactive teaching methods, and guide students to independently complete the corresponding level of learning tasks.

2.2 Design Task Work Page

When organizing students to learn the relevant knowledge of “design and implementation of fancy neon lights”, teachers should design a preliminary knowledge diagnosis table for students, which can provide assistance for students to make preparations in advance. By asking specific questions, students can judge whether they have the ability to learn relevant knowledge and skills. Only after students clearly understand all the problems listed in the diagnostic table of preparatory knowledge can they carry out preview. In this way, we can create a good environment for the effective development of differentiated teaching, so that students with different learning abilities can accurately find their own learning entrance. For example, in the preliminary knowledge diagnosis table, the teacher can list the following questions: Do you have the ability to flexibly use PROTEUS software? Do you understand the unidirectional conductivity of LED? Will you design the minimum system of SCM?

2.3 Design Questionnaire

Teachers can design the questionnaire with the teaching content of the lesson “design and implementation of fancy neon lights” as the goal. In the process of designing specific programs, teachers should clearly understand the learning objectives of students in this lesson: flexibly master the specific use of PROTEUS simulation software, understand the application method of LED unidirectional conductivity in hardware circuit design, specify the hardware circuit design approach based on the network labeling method. Students' ability learning objectives: be able to flexibly use the hardware circuit of the simulation software design task according to the requirements of specific problems, be able to understand the hardware circuit of single flashing neon lights. Therefore, in the process of designing the questionnaire, teachers should combine learning tasks and ability tasks to achieve goals and ask specific questions: Can you use PROTEUS to draw pictures? Can you fully

understand the characteristics of LED unidirectional conductivity? Can you fully grasp the application way of network labeling method? Can you systematically analyze the hardware circuit of LED?

3. Implementation of Offline Courses

3.1 Pre-Class Learning Feedback

Teachers use the teaching platform to make statistics on students' preview before class, and present the final statistical results to students in a table form, so that students can clearly grasp their own actual learning situation and learning progress. Based on the contents of this form, teachers evaluate students' participation in pre-class preview, and take diversified incentive measures to encourage students to actively complete the preview task designed by teachers^[1].

3.2 Analyze Common Problems

The teacher takes 3-5 minutes to test the students' completion level of preview before class, and combines the common questions raised by the students in the discussion area, and uses the classroom time to focus on explanations to help students answer questions^[2].

3.3 Reasonably Divide Learning Groups

In the process of organizing students to learn the content of SCM application practice course, teachers should divide the class into several groups with equal comprehensive ability according to the students' learning ability in a team of 3-4 people. Each group should have a student with strong performance ability and poor performance ability to balance, and create a good atmosphere of "helping and leading" in the group. In the process of assessing the completion of group tasks each time, teachers can take the scores of students who lack initiative and enthusiasm in learning as the final assessment results of the whole group, and the team members cannot be replaced after the completion of the team formation and before the next task. In this way, students with strong learning ability can actively help others, while students with weak learning ability will actively learn in order not to pull the back of the group. It not only improves students' language communication ability and expression ability, but also further improves students' sense and ability of teamwork^[3].

3.4 Group Centralized Discussion

In the process of group discussion, teachers should pay close attention to the discussion content, process and results of each group in real time, and should not immediately refute students' problems, but should take guiding measures to enable students to actively find existing problems and correct their own mistakes. On this basis, combined with specific teaching tasks, the group is required to formulate a complete set of implementation plans through centralized discussion. In order to avoid individual students fishing in troubled waters, teachers should also evaluate the enthusiasm of each student in the group discussion process, and determine the key assessment students of each group^[4].

3.5 Ask Questions in Groups

After the implementation plan of each group is determined, the teacher needs to communicate with the group members face to face, put forward specific questions and specify the key assessment points for students' answers in combination with the key knowledge points and rationality of the

relevant plan. According to the students' answers, whether the relevant plans are feasible can be determined. In this process, it should be noted that, even though the scheme set by the group is highly reasonable, if the students assigned to answer the questions lack systematic understanding of the key knowledge points and the rationality of the scheme, the scheme of the group cannot pass the examination, and the whole group members need to guide the students until they fully understand it^[5].

3.6 Implement Task Plan

After the task plan designed by the teacher is approved, the teacher can organize students to operate on the computer and observe the completion process of the whole task. In this process, teachers still need to attach great importance to the mutual cooperation among team members, and require team members to discuss and analyze the problems existing in the implementation of the whole plan, submit the problems that cannot be solved after discussion to teachers, and with the help of teachers, answer the questions^[6].

3.7 Assessment and Evaluation

After the implementation of the task plan is completed, students should inform the teacher at the first time, and verify the function of the plan with the witness of the teacher. Teachers will assess the key knowledge of each link, raise questions, and make a comprehensive evaluation on the performance of each member of the team^[7].

3.8 After-Class Tasks and Expansion Tasks

After students successfully complete the basic tasks in the classroom, teachers can assign corresponding after-school tasks for students in combination with their task completion, learning interest and learning ability. When assigning after-school tasks, teachers should ensure that the relevant content has hierarchical characteristics, and with the help of basic tasks, all students' basic knowledge will be more consolidated, and the use of expansion tasks can stimulate students' interest in learning and improve their learning ability, so as to ensure that students at different levels can improve their learning ability in the process of completing expansion tasks after class^[8].

4. Conclusion

Under the background of the Internet era, the online and offline hybrid teaching mode has become one of the teaching modes widely used in the practical application teaching of SCM, which enables students to no longer be constrained by time and space, and can independently choose learning content and time according to their own actual conditions. However, online learning is mostly based on students' spare time, which leads to the students' unsupervised autonomous learning effect, difficult to reach a satisfactory level. Therefore, in order to ensure that the role and value of online teaching resources are fully utilized and the teaching effect is maximized, teachers should reasonably design online and offline teaching resources in combination with students' actual learning ability and interest characteristics, check the effect of the mixed teaching mode from multiple channels, constantly adjust the teaching contents and methods, improve students' enthusiasm for learning and participation, and strengthen students' sense of teamwork.

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