Research and Practice on Online Teaching of "Configuration Control Technology" under the Background of Epidemic Prevention and Control

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Abstract

In order to ensure the teaching progress and teaching quality during the epidemic prevention and control period, and to achieve the goal of "stopping classes without stopping teaching, and without stopping learning", this article takes the "Configuration Control Technology" course as an example for research and practice. In response to the multiple problems encountered in the online teaching and online learning of the course, corresponding solutions and measures were formulated to ensure the smooth implementation and quality improvement of online teaching of the course.

Keywords

Epidemic; Online teaching; Online learning.

1.　Problem Presentation

Influenced by the COVID-19 epidemic, colleges and universities cannot organize offline teaching activities as normal. At the beginning of February, the Ministry of Education issued the "Guiding Opinions on Doing a Good Job in the Organization and Management of Online Teaching in General Colleges and Universities during the Period of Epidemic Prevention and Control", requiring universities to actively carry out online teaching activities such as online teaching and online learning. Ensure the teaching progress and teaching quality during the epidemic prevention and control period, and achieve the goal of "stopping classes without stopping teaching, and without stopping learning" . Against this background, teachers actively carry out online course construction and "Internet plus" teaching. They encounter multiple problems in the process of teaching implementation. Take the configuration control technology course as an example, the following are the details:

The online learning platform is unstable. Due to the surge in the number of users of the online learning platform, problems such as difficult login, jamming and even collapse often occur during the operation of the platform system.Online teaching classroom learning atmosphere is insufficient. It is impossible to carry out on-site Q & A or group discussion. The interaction and communication between teachers and students and between students are far less effective than on-site teaching. Such a classroom seems cold and does not have the warm learning atmosphere in the classroom.

The management and supervision function of teachers is weakened. In the physical space class, teachers know students' learning behavior and state clearly, while online teaching teachers cannot patrol in the classroom, directly face students' learning state, quickly learn students' class concentration, learning enthusiasm and initiative, mastery of knowledge points and skills, and can not stop students from playing games, listening to music Reading novels, sending messages and leaving the classroom halfway. The teaching effect can not be effectively guaranteed. In the process of online teaching, teachers can not provide on-site tour guidance, and fail to timely help and solve the problems encountered by students in the learning process. At the same time, due to the way of network submission, students are prone to plagiarism in

their after-school homework, so teachers can not find problems in time and provide targeted guidance through students' homework.

Lack of training equipment.Some key individual skills in the course of configuration control technology, such as configuration and PLC online communication and debugging, configuration and industrial control board online communication and debugging, cannot be trained" Comprehensive training projects such as "design of electric gate monitoring system" and "design of liquid mixing monitoring system" cannot be carried out smoothly.

Some students will have different degrees of anxiety. Due to the unknown ending time of the epidemic, the long isolation environment limits the scope of activities, resulting in nowhere to release the pressure, weak autonomous learning ability, worry about not keeping up with the learning progress and other factors are common factors causing students' psychological problems during the epidemic.

2. Solution Path

2.1. Double Platform Teaching

Double platform teaching mode is adopted to ensure the smooth implementation of classroom teaching. Use the online open course sharing platform of colleges and universities in Zhejiang Province to release the PPT, work task list, video, homework and other resources of the configuration control technology course, and complete the homework review, organization of tests and examinations, after-school interactive Q & A and other activities; Alibaba nail open platform is used to complete activities such as sign in, interaction, questions, Q & a counseling and live broadcasting in the classroom to assist the implementation of classroom teaching. When the provincial platform is unstable, the nail whole process online live broadcast mode will be started to complete the classroom teaching. When the nail platform live broadcast is abnormal, the nail voice + text mode will be enabled, and then the classroom teaching will be completed in combination with the provincial platform. The flexible switching and combination of the two platforms can effectively avoid the problem that the classroom teaching cannot be implemented normally caused by the sudden abnormality of the platform.

2.2. Teaching Design Optimization

Optimize the teaching design, especially the student work task list and teaching activity design of each class, so as to improve the classroom teaching effect. Based on the real industrial control system design project of the enterprise, this course determines three projects: "water level monitoring system design", "manipulator monitoring system design" and "electric gate monitoring system design". Each project adopts "modular" design to lay the foundation for the smooth development of students' autonomous learning. Pay attention to the design of students' work tasks in each class, and urge students to actively study online through work tasks with time nodes. Students work according to the assignment book and the teacher's instructions. In the process of work, you need to leave a message in the nail group in the form of text + screenshot, and release the phased results of the work task in the nail group in the form of screenshot or video within the specified time. On the one hand, the release of problems and achievements is conducive to creating an active classroom atmosphere, creating a good learning atmosphere and stimulating students' learning enthusiasm and initiative. On the other hand, it is helpful for teachers to realize effective classroom supervision and guidance. The teacher obtains the difficult points of students' learning according to the problems released by students, and gives guidance in the way of group live broadcasting for common problems and individual problems. Obtain the mastery of students' knowledge points and skill points according to the phased results released by students, and feed back improvement or praise information through text comments. In addition, the classroom test content is designed for the

knowledge points of video explanation. Students further consolidate classroom knowledge by completing the test and ensure the quality of classroom learning in a variety of ways.

Pre class preparation stage: teachers release pre class tasks based on the provincial online open curriculum platform, track students' online learning, collect difficult problems encountered by students, and timely adjust the teaching tasks of the next class. Students understand and get familiar with the preset introduction knowledge through the online course platform, and test the preview effect through pre class tests and exercises, so as to lay a knowledge foundation for the development of classroom teaching activities.

In class teaching stage: with the help of live broadcast platform and provincial online course platform, students carry out work according to the work task list under the guidance and guidance of teachers. Teachers explain common problems intensively and guide individual problems separately during the implementation of classroom teaching. Finally, teachers assess and evaluate the work tasks completed by students according to the stage results and expected results.

After class promotion stage: students can arrange other work tasks independently according to their classroom learning. Students with good classroom learning can learn and consolidate based on corresponding resources through online open course platform after class, and conduct in-depth learning with expanding resources; While other students can barely complete the task under the guidance and guidance of teachers, these students need to watch the platform supporting micro videos repeatedly for consolidation learning. At the same time, teachers communicate and discuss with students after class with the help of live broadcast platform and online course platform discussion area to answer questions and solve doubts for students; Collect students' relevant works and upload them to the platform for students' reference and exchange.

2.3. Virtual Simulation Project Design

In view of the lack of training equipment, a training system is developed based on the MCGS configuration software for individual configuration courses and comprehensive skills training. The designed system is planned to implement the following 13 project simulation debugging:

Table 1. Training items

Number	Name of training program
1	Control of automatic washing machine
2	Sequence control of three-phase motor
3	Stepper motor control
4	Traffic light control
5	Four storey elevator control
6	Electroplating production line control
7	Water tower water level control
8	Automatic control molding machine
9	Automatic mixing of multiple liquids
10	Automatic material transportation and loading system
11	Automatic rolling mill
12	Mail sorter
13	Light of iron tower

3. Summary of Experience

Students must pay attention to ideological education. From the heroes and deeds that emerged in the process of fighting the "epidemic", we extract fresh and heart-shaking ideological and political elements and integrate them into classroom teaching, transfer the power of example, can guide students to treat the epidemic rationally, stimulate positive energy, and realize morality The basic goal of the tree man.

In line with "students as the main body and teachers as the leading", the key to ensuring the quality of teaching is to do a good job in the teaching design of the epidemic prevention and control period. A mixed teaching strategy was designed in the three stages of pre-class-in-class-after-class, and achieved better implementation results.

In the process of online teaching, creating a good learning atmosphere is very important. Teachers must avoid purely "anchor" performances and students only acting as an "audience" mode. The network "director" mode should be turned on to allow students to participate in the teaching interaction and complete work tasks under the guidance of the teacher. In the course of teaching, it is possible to strengthen teacher-student interaction as much as possible. You can activate the learning atmosphere of online classrooms through classroom connection, work release, work reviews, online answering, voting, online answering, etc., to enhance student participation and concentration, and guide Students complete learning tasks on their own.

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