

Research on the Construction of Online Classroom and Online Teaching Methods

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Abstract: Taking the computer network engineering course of network engineering major in Application-oriented Universities as an example, this paper analyzes the problems and advantages of online teaching of professional courses based on the Internet, constructs online classes, configures online teaching resources, shares online live teaching and experimental guidance methods based on QQ group, and forms a relatively complete set of professional courses online teaching mode combining homework arrangement and video playback after class. It provides a simple, fast and effective way to solve the problem of failing to attend classes collectively during the covid-19 epidemic.

Keywords Professional courses; QQ group classroom; Sharing screen; Voice communication; Live video

INTRODUCTION

Under the influence of the Covid-19 epidemic, all kinds of schools can't start school on time. Schools require teachers to carry out internet-based online teaching. However, many online education platforms recommended by the school are difficult to log in, without exception, there is a phenomenon of stuck and long waiting. In addition, most of the learning devices supported by these platforms are mobile phones, which are not suitable for the teaching of professional courses in Colleges and universities.

This paper takes the computer network engineering course of network engineering major in Application-oriented Universities as an example, analyzes the problems and favorable conditions faced by online teaching of professional courses based on Internet, constructs online classroom, configures online teaching resources, shares online live teaching and experimental guidance methods based on QQ group, and forms a relatively complete set of professional courses on-line teaching mode combining homework arrangement and video playback after class. It provides a simple, fast and effective way to solve the problem of failing to teach collectively during the epidemic of covid-19.

ANALYSIS OF ONLINE TEACHING PROBLEMS IN PROFESSIONAL COURSES

Compared with the basic courses with relatively stable knowledge content, the course content of the specialized courses in Colleges and universities has the characteristics of wide range and rapid change, which is the case with the course of computer network engineering in the major of network engineering. In order to carry out online teaching in a

short time, the first problem is the lack of online teaching resources. Taking the website of "icourse - excellent open course of China University" as an example, computer courses mainly focus on the basic courses of data structure, programming, operating system [Jiang, *et. al.*, 2019], etc. There is no professional "computer network engineering" course and its corresponding teaching resources. Lack of textbook is the second problem that affects the effect of online teaching. According to the Convention, textbook can only be distributed after students arrive at the school. But because of the epidemic situation, students cannot get the textbook, so they can't read the contents of the textbook systematically before and after class, which seriously affects the effect of students' offline self-study, and puts forward higher requirements for teachers' online teaching and resource arrangement. The third problem is that the recommended online teaching platforms support mobile learning, but for the teaching of professional courses in Colleges and universities, the mobile learning end cannot give students a sense of constraint and learning atmosphere, or even make students who lack learning motivation and self-control weak escape from the classroom [Han, *et. al.*, 2019].

CONSTRUCTION OF PROFESSIONAL COURSE NETWORK CLASSROOM

Introduction to QQ Group Online Education

QQ group online education is a set of solutions to realize online education based on QQ group technology. A set of functions provided by the group to support online education, such as classroom interaction, after-school management, and learning

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material sharing [Su, *et. al.*, 2019]. These functions can be divided into four aspects: basic ability, remote sharing, member management and course booking. In terms of basic capabilities, it supports multiple platforms (windows, MAC, tablet, IOS, Android) such as computers and mobile phones, and supports multi-terminal launching and joining courses; in terms of remote sharing, the computer supports real-time presentation, screen sharing, whiteboard presentation and other functions of PPT documents. Mobile phones and tablet terminals support viewing ability. In terms of member management, multiple terminals support management capabilities such as full member mute, individual mute, invitation to join, etc. In terms of course booking, the mobile terminal supports such functions as course booking, automatic reminder and course link sharing and joining. In QQ group or discussion group, group call can be launched at any time, supporting up to 50 people to chat happily.

QQ software platform also provides intelligent judgment ability, which can judge terminal hardware and network conditions in real time, quickly adjust to the best picture quality, and connect voice or video phone in 0.5 seconds at the fastest. In the perfect support of mobile phone, PC, pad and other multiple devices interworking at the same time, realize seamless switching between multiple devices in the call state. In addition, QQ software platform has established a global network acceleration system, with servers covering all corners of the world and intelligent selection of the optimal access point [6], to ensure the smooth flow of online education.

Construction of QQ Group Online Classroom

The basic conditions of using QQ group technology to construct network classroom include hardware, software and QQ account. In terms of hardware, a networked multimedia computer, including headphones, microphones and a high-definition camera. In terms of software, download and install the latest version of QQ client program. Finally, register an available QQ account. After this condition is met, the teacher creates a QQ course group, invites students to join the group, and sets the teacher as the administrator. In this way, the QQ group online classroom framework has been established. With the support of QQ group technology, it can provide resource storage, live online teaching, text or voice communication, homework arrangement and other functions. In order to support the "recording screen" function in the live broadcast process, the bandicam recording software [7] can be installed and properly configured.

Configure Network Classroom Teaching Resources

After the QQ group network classroom framework is established, the teachers should complete the

preparation of curriculum resources, such as making, sorting, numbering, classification, and upload them to the curriculum group folder. Taking the course of computer network engineering as an example, in terms of teaching organization and arrangement of teaching activities, the teachers make teaching schedule and experiment schedule according to the teaching assignment and syllabus. In the aspect of classroom teaching, on the basis of the previous classroom teaching materials, the teacher changes the courseware according to the teaching needs and changes. In the aspect of experiment teaching, we collect and sort out the virtual network environment software needed for the course experiment, and provide the experiment teaching arrangement and corresponding experiment instruction. Sort out reference materials of Huawei Technology and Cisco technology.

EXPLORATION OF ONLINE TEACHING METHODS FOR PROFESSIONAL COURSES

The online classroom based on QQ group has the functions of "sharing screen", "whiteboard demonstration", "assignment" and "assignment comment", which can provide corresponding technical support for online live teaching. If the "group video live room" (requiring identity authentication) is opened, the functions of "ppt sharing", "video playing", "sharing screen" and online text and voice interaction can be easily realized. When you need to play audio files in the course group, you need to connect the speaker jack and microphone jack of the computer to realize the audio playing in the course group. The teaching activities that can be carried out in QQ group online classroom are shown in Table 1.

Table 1. Teaching activities supported by QQ group online classroom

Teaching activities	QQ group network classroom function	Teaching form
Theory class / group Q & A	PPT, sharing screen	Live broadcast online
Play video	Live Room / video playback	Live broadcast online
Answering questions after class	Text message, voice message, etc	Live broadcast online/off line
Demonstration of experiment class	Operation demonstration, sharing screen, etc	Live broadcast online
homework Publishing	Assignment (text, picture, video, micro class)	online
Do the homework	Complete online (text, picture, voice)	online
Experimental guidance	Operation demonstration, sharing screen, etc	Live broadcast online
Classroom teaching video	Running screen recording software	Upload/play it offline

In each class, teachers can enter QQ group "share screen" mode or live room in advance, play class

prompt information and music, and wait for students to join. The student end should also check and set the computer audio and video parameters in advance, and enter the "video call" mode when checking the normal use of audio and video (including microphone) to prepare for class. In order to achieve better teaching results, it is suggested that students use computer platform for online teaching and learning.

It should be emphasized that online teaching will enlarge teachers' language function in online classroom, compress their body function and weaken their binding force on online learning students. Therefore, in the process of online teaching, teachers should actively initiate more language and text exchanges, communicate with students in a timely manner, minimize the time period of no voice, and let students know clearly that "the course is in progress".

CONCLUSION

From the teacher's point of view, the superior performance of QQ software platform technology, together with the curriculum resources in the group files and the careful explanation of the teachers, the professional online teaching based on QQ group

online classroom can not only play the advantages of traditional classroom teaching, but also provide students with auxiliary resources for self-study at any time. In addition, the "video recording" function in the process of live teaching makes it possible for online live teaching of courses based on QQ group, and can provide complete classroom playback after class. This is an ideal, simple and practical teaching method in the situation of covid-19 epidemic.

REFERENCES

- Han Yan. A comparative study of traditional classroom teaching and network teaching. *Heihe Education*, 2019 (4): 14-15.
- Jiang Xiao-Ling, Zhang Hui, Xu JiaMing, Application of Individualized Service System for Scientific and Technical Literature In Colleges and Universities, *Journal of Applied Science and Engineering Innovation*, 2019, 6(1), 26-30.
- Su Wei, Analysis on the Quantitative Evaluation Method of University Students' Comprehensive Ability, *Journal of Applied Science and Engineering Innovation*, 2019, 6(3), 154-157.