

Research on Online Teaching Mode in Colleges and Universities under the Background of Epidemic Situation: From the Perspective of KISS Educational Technologies

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Keywords: online teaching, KISS educational technologies, constructivism, COVID-19 outbreak

Abstract: In view of the current sporadic outbreaks of COVID-19 nationwide, closed management has been realized in many universities. In order to implement the relevant decisions and arrangements of the Ministry of Education to carry out online teaching, a teaching model of “live broadcast teaching by teachers via instant messaging software +independent learning of students via online teaching platforms” was proposed based on the constructivism from the perspective of KISS educational technologies. In this paper, the basic course of computer culture in higher vocational colleges was taken as an example to explore the whole process of online teaching.

1. Research Background

In recent years, affected by the outbreak of COVID-19, online teaching activities have been carried out in many places according to the deployment by the Ministry of Education under the background of epidemic situation. At the same time, as the epidemic situation in Shanghai began to rebound in March this year, a quasi-closed management mode was opened in various colleges and universities, and online teaching was carried out in an all-round way in accordance with the deployment and implementation of “suspension of classes without suspension of teaching, learning, research and practice”. Affected by the outbreak of COVID-19, teachers and students have started online teaching, that is, students mainly study together in the school while teachers work at home. They carry out teaching and learning through network connection, breaking the traditional classroom in the same space. The quasi-closed management is implemented in colleges and universities to reduce the flow of off-campus personnel and the gathering of on-campus personnel. Online teaching has become an important teaching method in colleges and universities during the epidemic period because it can realize anytime and anywhere learning by breaking the space limitation. However, the online teaching is not a simple accumulation of school teaching resources on the teaching platform, but an effective combination of teaching content and teaching activities. In order to improve the efficiency of online teaching, a KISS educational technology model should be adopted for the differences in information level between teachers and students in colleges and universities.

2. Redefining the Online Teaching Mode from the Perspective of KISS Educational Technologies

2.1. Understanding of KISS Educational Technologies

With the rapid development of Internet technology, new platforms and new tools are emerging one after another, which brings challenges to teacher education. KISS educational technologies refers to the technologies that advocate the use of convenience, practicability, easy learning and easy use by teachers and students in school teaching and can effectively improve the efficiency of work learning [1]. Due to the quasi-closed management of schools during the epidemic period, it is necessary to explore a new mode of online teaching that is convenient for teachers and students, and complete online teaching with super simple teaching techniques, software systems and equipment.

2.2. Online Teaching Mode based on Constructivism

Any teaching model needs the support of relevant theories. While actively carrying out the research on online teaching model, the author also carries out the research on constructivism theory. Constructivism learning theory emphasizes that students need to exert their subjective initiative in the learning process, and teachers play the role of guide in teaching, providing students with the environment of independent thinking, cooperative communication and problem discussion, so that they can actively construct knowledge according to practical experience. According to constructivist theory, learners are not passively accepting knowledge, but actively constructing it^[2]. The application of constructivism in online teaching needs to meet the following requirements: specific teaching tasks, learners' independent problem solving and mutual cooperation. Teachers should not take up too much time in the whole teaching process. Instead, they should assign specific tasks to learners so that they can complete them through cooperation and discussion.

In this paper, all kinds of teaching platforms and tools during the epidemic period were comprehensively analyzed based on constructivist learning methods by using minimalism in order to find out a new online teaching mode, and finally a teaching model of “live broadcast teaching by teachers via instant messaging software +independent learning of students via online teaching platforms” was explored. Teachers can teach “face-to-face” through instant messaging software and use online teaching platforms to enable students to build knowledge. In this way, teachers can complete the whole process of teaching through the combination of online and offline according to the teaching syllabus, and finally achieve the established teaching objectives and complete the phased teaching plan. Thus, how to create a high-quality online live classroom efficiently and quickly is particularly important^[3]. How to effectively connect and integrate the online teaching classroom preparation stage, teaching stage and consolidation stage is the focus of this research.

3. Application of Online Teaching Mode from the Perspective of KISS Educational Technologies

3.1. The Teaching Preparation Stage

3.1.1. Making Teaching Plans

Before the outbreak of COVID-19, the curriculum design and teaching plan arrangement in universities were based on face-to-face classroom teaching, which was quite different from online teaching in terms of teaching plan cycle and content arrangement. However, college teachers need to make adjustments and preparations for teaching plans according to the epidemic situation such as determining the teaching content based on the constructivist thought of KISS educational technologies, preparing online teaching materials and making live online teaching courseware.

During the special epidemic period, teachers should add some humanistic care when arranging the teaching content, encourage students to stay at home and keep studying, advocate students to arrange their daily life and rest scientifically and reasonably, design the teaching content to appease students' emotions and psychological counseling, etc., so as to stabilize students' learning state in online learning, and enrich students' after-school learning by collecting network-related materials and teaching videos in a super simple way.

3.1.2. Building a Teaching Mode

After investigation and research and teachers' experience, the author studied several instant messaging software and live broadcast software: QQ, WeChat, Tencent Conference, DingTalk, Zoom, etc. The comparison of relevant conditions after the use of online teaching is shown in Table 1.

Table 1 Comparison of teaching software

S/N	Software name	Usage scenarios	Advantages and disadvantages
1	WeChat	An instant messaging software that supports mobile operating system, mainly for smartphone users, is the preferred tool for communication between teachers and students.	It is easy to use, interactive and has many users. However, the transfer of large files is limited.
2	QQ	It can communicate instantly, conveniently and timely. As an alternative, it is a software suitable for teachers to release relevant notices and materials before class.	It is easy to install and powerful. However, there are many advertisements and the use of them by young people is gradually decreasing.
3	Tencent Conference	It can provide convenient and easy-to-use, high-definition smooth, safe and reliable video teaching	It is convenient and connected with WeChat. It is inconvenient to use shared desktop and whiteboard simultaneously.
4	DingTalk Conference	It provides live classroom multi-scene use, and can also be recorded and played back.	The shared desktop and whiteboard can be used simultaneously. Because there are many categories of functional items, it is inconvenient to find them.
5	Zoom	It is a global HD cloud videoconferencing collaborative tool.	It is a foreign product with limited functions.

To sum up, after comparing the commonly used instant messaging tools, based on the minimalist educational technology and the constructivist thinking, a teaching model of “live broadcast teaching by teachers via instant messaging software +independent learning of students via online teaching platforms” was explored. As the first choice for teachers and students to learn and communicate offline, teachers can use WeChat or QQ to set up class teaching groups, so as to facilitate the interaction between teachers and students, and release teaching notices and materials. Tencent conference, DingTalk Conference or Zoom can be used for live teaching. Teachers prepare teaching courseware before class, and complete live teaching in flexible ways, such as audio and video live broadcast, sharing teaching courseware, online answering, thinking and discussion, etc.

3.1.3. Selecting Teaching Platforms

According to the curriculum plan, teachers can use the existing teaching platforms such as Blackboard platform and Moodle platform to create courses, and set up courses according to the content or time to provide network space for students’ autonomous learning. On the teaching platform, students can preview and review the content of the teacher's live class, complete the homework on the platform, and study in groups. By arranging discussion and group cooperation tasks, students can actively participate in thinking and building knowledge.

3.2. Implementation of Online Teaching Model of Computer Culture Foundation

3.2.1. Preparation before Class

The Foundation of College Computer Culture is a course combining theory with practice, in which the operability is relatively strong. For improving the effect of classroom science, teachers and students need to make relevant preparations before class. Based on the perspective of KISS educational technologies, teachers can use QQ group and WeChat group to push learning materials in advance before class, or prepare teaching materials in the school's self-built teaching platform, so that students can preview accordingly. Teachers share the courseware, lesson plans, operating topic materials or micro-lesson videos to students in advance, so that students can learn well before class and complete the tasks before class. The Foundation of Computer Culture is the basic introductory

course of computer in colleges and universities, which mainly involves basic computer knowledge, network foundation, operating system, office automation, Photoshop, Flash and so on. By learning the course, students can not only master the basic theory and practical operation of computer, but also take the Shanghai Computer Level 1 examination after the course. Before class, teachers publish computer culture basic course arrangement, teaching PPT, after-class practice materials, etc. in WeChat group and QQ group, and at the same time create computer culture basic courses on the teaching platform according to the teaching plan. Students log into the teaching platform to complete phased teaching tasks, such as learning layers in Photoshop, understand the relevant definitions of layers through teaching courseware, intuitively understand the use of layers in PS through cases, and complete tasks on the platform through tasks.

3.2.2. In-Class Teaching

During the epidemic, teachers carried out online teaching through online instant messaging tools. For example, by using Tencent conference, they reserve the class time and duration according to the teaching plan before class, and share information such as meeting number and password with students through WeChat or QQ. Teachers and students conduct face-to-face or voice call lectures and face-to-face communication through Tencent Conference. At the same time, teachers can play PPT or demonstrate teaching materials by sharing screens. In classroom teaching, teachers can effectively control the classroom as classroom managers. On the one hand, they can control the content in the classroom, on the other hand, they can maintain classroom discipline, and they can shut down, mute and log off students. They can also record the classroom at Tencent Conference, which is convenient for students to review and consolidate after class. Tencent conference provides many auxiliary tools to meet classroom teaching, such as virtual background, sound optimization, beauty effect and so on. Students can also participate in the class by raising their hands, turning on or off the mic, and enabling the camera, voice, etc. Teachers can authorize students to make a student become classroom managers to assist them to complete the network classroom teaching work.

In the online live classroom teaching, teachers should strictly follow the teaching plan and make preparations for online classroom in advance, such as a quiet teaching environment, a stable network, and normal operation of computer microphones, cameras and other equipment to ensure the normal live classroom. In the Tencent conference, teachers can choose or make appropriate teaching background according to needs to increase the sense of classroom atmosphere. In the teaching process, teachers need to adjust the speed and camera angle according to the actual situation to ensure smooth and stable sound and picture, and to ensure that students can learn easily. It is necessary to increase students' participation and interaction in live teaching, and to increase communication between teachers and students through questions and answers. Through the use of sign-in, hand-raising, discussion, questionnaire survey and other links in the conference system, the interaction between teachers and students can be realized, which can not only check the teaching effect in time, but also feed back the teaching problems in time to improve the teaching effect. Based on the idea of KISS educational technologies, teachers need to pay more attention to concise language expression, control class time and set appropriate recess time in live broadcast teaching ^[4].

3.2.3. After-Class Interaction

During the epidemic period, the live online teaching is limited by time and space, and the online classroom can not meet the daily teaching ^[5]. Online teaching of Fundamentals of Computer Culture also needs to be extended and expanded after class. From the perspective of constructivism and KISS educational technologies, teachers can cultivate students' autonomous learning and cooperative learning ability through teaching task-driven, problem-guided and team training. After class, teachers release autonomous learning tasks and homework through the QQ group and WeChat group. Teachers and students can directly interact and communicate with each other in the QQ group and WeChat group, and answer questions. Students can share their works, learning materials, etc. in time. Teachers can assess the students' normal performance based on their participation. For students with low interaction frequency, they can conduct individual private counseling to help solve problems and enhance their interest in learning. At the same time, teachers publish teaching tasks on the teaching

platform, arrange students to log in to the platform to learn and participate in interaction, upload their works in time, and complete their learning tasks. Through online learning, students can independently construct a knowledge system and gradually form the ability of autonomous learning and lifelong learning. After class, teachers need to find out the problems before and during class in time, make a comprehensive summary, and improve the online teaching ability and level by practice again and again, so as to endow the online teaching classroom with vitality.

4. Conclusions

Under the background of epidemic situation, especially during the period of closed management, it is the most important way for colleges and universities to carry out online teaching in order to ensure normal education and teaching. It is also particularly important to study the online teaching mode in colleges and universities. As the Fundamentals of Computer Culture is a basic course in higher vocational colleges, it is the foundation to learn this course well. During the special epidemic period, the teaching mode of “live broadcast teaching by teachers via instant messaging software +independent learning of students via online teaching platforms” is an alternative and innovation of the traditional teaching mode. Online teaching presents new opportunities and challenges to teachers, so they should make use of new KISS technology tools to ensure “suspension of classes and continuous teaching” and “student-centered” construction of teaching environment to allow students to learn independently. Teachers and students need to work together to overcome difficulties in the face of epidemic situation, which makes online teaching even better.

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