

Challenges and Countermeasures Faced by Online Teaching Models in Higher Vocational Colleges under the Background of Information Technology

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Abstract: In view of the pneumonia epidemic in COVID-19 this year and the call of “stopping classes and learning”, higher vocational colleges apply information technology to actively carry out online teaching. However, due to the characteristics of online teaching in virtual space, relatively flexible time, weak heteronomy in practice and quality control based on big data, online teaching in higher vocational colleges faces multiple challenges. Therefore, teachers should update their teaching concepts, improve the ability of organizing online teaching, and improve students' awareness and ability of autonomous learning. The teaching management department should establish strategic thinking and improve the management ability of taking big data as the countermeasure.

1. Introduction

The pneumonia epidemic in COVID-19 has affected all walks of life in China to a certain extent, including the education sector, and schools at all levels have to postpone the opening of the school. However, the national education industry actively responded to the call of “Stop class but don't stop learning” by the CPC Central Committee and the Ministry of Education. Teaching administrators, teachers, students and parents should actively participate in the online teaching process to ensure the normal development of education and teaching activities. Although vocational colleges actively explore online teaching rules and methods to ensure the quality of teaching plays an important role, but it still faces many practical challenges. Timely exploration of effective strategies to meet the challenges is not only the practical need to ensure the effectiveness of online teaching during the epidemic period, but also the long-term need of effective online and offline hybrid teaching after the epidemic.

2. The Difference between Online Teaching and Offline Teaching

Online teaching is a new educational model that appears with “Internet+education”. It is used as an auxiliary teaching method in teaching and plays an important role in the epidemic situation. The difference between online teaching and offline teaching lies in its unique features in available teaching resources, control of teaching objects and guarantee of teaching effect.

(1) Online teaching is conducted in virtual space

Space is an indispensable prerequisite for teaching activities. From the perspective of teaching activity space, online teaching is conducted in network virtual space, which is different from offline physical spaces such as classrooms, laboratories, training rooms and dormitories. Offline teaching is a face-to-face teaching activity between teachers and students, while online teaching is a non-contact and less communication teaching activity between teachers and students at both ends of the network. The virtual nature of online teaching space challenges the effectiveness of teaching activities.

(2) Online teaching is flexible in time

As an offline teaching, it has strong stability in time. Teachers and students carry out teaching activities at designated locations according to the time prescribed by the timetable, which determines that teaching contents and processes are not repeatable, while online teaching is flexible

in time. On the network-based big data platform, teachers' teaching videos, voices, scripts and other contents can be released to students before and after teaching, so that students can learn in advance and repeat their studies. "Students can learn more flexibly" [1].

(3) Online teaching is weak in practice

In online teaching, teachers' teaching and students' learning are carried out in the same time and space. Teachers and students, students and students, supervisors and teachers, teaching management departments and teachers are all directly binding. Heteronomy plays a vital role in ensuring the effect of education and teaching. The non-identity of space and time in online teaching will greatly weaken the role of heteronomy. Teachers who are not serious in teaching may be perfunctory, and students with weak self-control may turn on teaching videos and do other things unrelated to teaching. The weakening of heteronomy in online teaching will directly affect the teaching effect.

(4) Online teaching quality control is based on big data

For offline teaching, teaching management, teaching supervision, peer teachers and counselors, etc., form face-to-face supervision, guidance and communication for teachers through listening and checking classes. However, the flexibility of online teaching, because of its virtual nature of time and space, makes it difficult to effectively control the teaching quality. The only relatively effective quality control means is big data based on each platform, and the teaching management department supervises and manages teaching activities in the background of the system according to big data. At the initial stage of operation, it is difficult to take effective measures to accurately control the online teaching quality based on big data due to problems such as technology use, network lag and equipment defects.

3. Challenges of Online Teaching in Higher Vocational Colleges during the Epidemic Period

(1) Higher vocational colleges are not suitable for practical teaching

The Ministry of Education clearly stipulates that the proportion of practical teaching hours in higher vocational colleges should not be less than half of the total hours. As soon as the notice of "Stop class but don't stop learning" came out, all higher vocational colleges, under the guidance of the opinions of the Ministry of Education, provincial education departments and other relevant departments, made full use of the micro-courses, massive open online course courses, video courses, teaching resources and other high-quality online classroom teaching resources built by the state, provinces One school, one case online teaching methods. However, the guarantee of practical teaching effect depends on the specific experimental training place, equipment or simulation teaching software. The third-year students in higher vocational colleges are stipulated in the internship stage, and the first-year and second-year students are also the beginning stage of professional (skill) courses. Teachers and students can't enter the experimental training places because of the influence of the epidemic, and the hands-on operation can't be realized.

(2) Teachers in higher vocational colleges can hardly meet the requirements of online teaching

Online teaching depends on teachers. Teachers' teaching philosophy, information literacy and ability have an important impact on online teaching quality. It is difficult for most teachers to adapt to the change from face-to-face teaching to online teaching in a short time. First of all, during the epidemic, some teachers didn't know enough about online teaching, and they resented or even resisted online teaching. Reflecting that online teaching often shows teachers' passive coping, which seriously affects the teaching effect. Second, some teachers, especially older teachers, are not competent for online teaching because of their limited information literacy and information teaching ability. Most teachers are used to face-to-face and offline teaching. A "strong sense of online teaching" will lead to a sense of "out of control" in online teaching. Third, most teachers lack high-quality online teaching experience, which is difficult to solve in a short time. According to the recent online teaching and training organized by higher vocational colleges in China, the macro-organization mobilization and micro-platform use have been fully done, but the high-quality online teaching design, teaching methods and teaching ability training are still lacking [2].

(3) Autonomous learning of higher vocational students is affected by lack of ability

The teaching situation suddenly changed from school to family and from physical space to

virtual space. The teaching time is relatively flexible, and students can open the network terminal around them for online learning anytime and anywhere. At present, the quality of students in higher vocational colleges is diversified, and many students in higher vocational colleges have weak knowledge base, lack of learning methods and lack of learning motivation. Even under the supervision and management of teaching teachers, they are tired of learning, which makes it difficult to ensure that they pay attention to lectures and participate in classes effectively. Students lack effective supervision and self-control in virtual teaching space, and can't form a certain learning atmosphere. It is difficult for most students to study online consciously. Without certain time and space constraints, students are more likely to be disturbed and it is difficult to calm down and study online. In the process of online teaching, students may open online classes and do things unrelated to study. A survey of online teaching progress control shows that 17.0% of them are out of control, 72.5% are difficult to control, and only 9.6% are controllable. 38.3% of the students think that there is no learning atmosphere, and 43.6% of the students think that there are other more important things to do.

(4) The software and hardware of online teaching in higher vocational colleges can not meet the needs of teaching

Online teaching is conducted through the network platform, and the necessary hardware and software include the Internet, smart phones or computers, teaching assistant APP, teaching platform providers and technical guarantors, cameras, microphones and their compatibility, etc., all of which are indispensable, so online teaching cannot be carried out normally or effectively. However, due to the great demand for hardware and software and the high demand for online teaching, online teaching is full of uncontrollability. Once there is a collective problem with the software and hardware used by teachers and students, the smooth development of online teaching will be seriously affected. The most common and thorny problem is system crash. During the outbreak, universities, primary and secondary schools and various training institutions adopted the same or several teaching systems at the same time. In many cases, tens of millions of people surf the Internet at the same time. No matter how powerful the server is, it's hard to get so many people online at the same time. Once the system fails, the normal online teaching will stop and become unsustainable, bringing frustration, powerlessness and anxiety to teachers and students. In practice, network teaching platforms such as "Rain class", "Cloud class", "Tencent class", "Nail class", "QQ group" and "Screen share" commonly used by teachers and students will inevitably have the embarrassing situation of system collapse. In addition, for students in higher vocational colleges, cities will soon enjoy 5G networks, but some students come from remote mountainous areas. Their place of residence is a still very backward 2G network, and the gap between urban and rural areas makes it impossible for them to realize online learning. They still need to continuously optimize guarantee conditions [4].

(5) The effectiveness of online teaching management in higher vocational colleges needs to be improved

The sudden epidemic situation also poses a new challenge to the teaching management in higher vocational colleges. This paper puts forward how the online teaching management department should actively organize teachers to carry out online teaching activities according to the requirements of "Stop class but don't stop learning", so as to ensure the normal and orderly teaching activities to a certain extent. However, facing the sudden outbreak of the epidemic and the helplessness of online teaching, higher vocational colleges also show a lack of experience, and the effectiveness of management needs to be improved. First of all, at the beginning of the outbreak, schools didn't know enough about the advantages and disadvantages of major online teaching platforms, and without systematic training, they blindly arranged teachers to carry out teaching activities on specific teaching platforms, which made it difficult to ensure good teaching results. Secondly, the use of online teaching technology, network stuck and equipment defects are inevitable. Therefore, it is difficult to accurately take effective measures to control the quality of online teaching based on big data, and the use of big data to supervise the teaching effect is almost the only effective method. Finally, it is difficult to reach an agreement on the evaluation standard of

teachers' teaching workload, which will affect teachers' enthusiasm for online teaching to a certain extent, thus affecting the teaching effect.

(6) The online management of higher vocational college teachers is weaker than offline management

In online teaching, teachers and students are not in the same physical space, so teachers don't understand students' classroom state and behavior, and occasionally exchange information through video, voice or text. However, after the whole class, only a small number of students are managed, which is impossible for most students, so it is impossible to carry out effective management and supervision, let alone guidance. Compared with offline classroom, teachers and students are in the same classroom, laboratory, etc., and always face to face in class. Teachers can tell students' classroom learning state and behavior at a glance. It is of no practical significance to rely on students' autonomous learning without a solid teaching environment.

4. Strategies for Higher Vocational Colleges to Cope with Online Teaching Challenges

(1) Teachers should update their teaching concepts and improve their ability to organize online teaching

First, teachers should renew their ideas. Teachers in higher vocational colleges should change the traditional concept of focusing only on offline teaching, fully realize the incomparable advantages of online teaching and offline teaching, and constantly explore the mixed teaching mode and method of “online+offline”.

Second, we should strengthen our study, master the means of information technology education, and use new media and new technology to teach. This is the trend of future education development. Information literacy will become an essential basic literacy for teachers to carry out education and teaching activities. Teachers in higher vocational colleges should not only be satisfied with offline teaching, but also make up their minds to explore, learn and master the new mode of information technology teaching. Only by continuous self-innovation can we not be eliminated in the process of development.

Third, promote the research of online teaching. Taking the teaching and research section as the unit, the video curriculum design seminar is mainly aimed at how to do a good job in curriculum design, so that our college classroom has a theoretical height. At the same time, teachers are required to search for teaching methods similar to their own courses and improve the course design on Chinese university MOOC, School Online, Netease Open Class, University Resource Network, MOOC China and Good University Online.

Fourth, pay attention to teaching design and improve teaching effect. Comprehensive utilization of the unique advantages of online teaching, according to the reasonable design of teaching objectives and teaching contents, integration and utilization of high-quality teaching resources such as massive open online course, and the use of effective teaching methods and means to explain key and difficult issues thoroughly. At the same time, we should pay attention to the interactive links between teachers and students, such as online answering questions and discussions, so as to achieve the organic combination of teaching and learning. In special times, teachers should spend more time guiding students to study independently, inquiry and cooperation at home according to their characteristics. In addition, teachers' classroom teaching design should be enriched. Based on vocational education, teachers are encouraged to combine professional course teaching and carry out personality education with “life and disaster”, “responsibility and responsibility” and “occupation and morality” as the main body.

Finally, create a good online learning atmosphere. In asynchronous online learning, teachers and students are scattered in different places. Therefore, when organizing teaching, teachers should design interesting opening before class, push learning materials in advance, publish learning tasks regularly, and set up open topic discussion, so as to make learners' community run well and create a good learning atmosphere.

(2) Improve students' awareness and ability of autonomous learning

First, “Stop class but don't stop learning” online learning is a new challenge for students, and a

major test for students' autonomous learning and self-management ability. Students' effective learning is the key to ensure the quality of online teaching. Therefore, it is necessary to correct the learning attitude, which determines the learning effect. Only positive and serious learning attitude can ensure the effectiveness of online learning. Students should link their study with the future and destiny of the country and their own development, aspire to become “great country craftsmen”, realize their self-worth and life ideals in serving the country, and establish their learning attitude on this basis. Teachers and students need to regard online learning as a “formal classroom” and complete the “homecoming ceremony” spiritually.

Second, scientifically formulate study plans and goals. With plans and goals, learning will not follow blindly. Teachers should learn to arrange learning plans and goals according to the online teaching schedule and online teaching materials provided by teachers, and reflect on deficiencies and make continuous improvements after daily study.

Third, create a quiet learning environment that is easy to enter the learning state quickly, so as to achieve the expectation of not being disturbed by family members and minimize and avoid the interference of the outside world.

Fourth, know yourself and yourself, and use your favorite and most efficient online learning methods to complete the learning tasks assigned by teachers on time and in quantity.

Finally, increase the control of students' after-school study. Teachers, academic affairs departments, counselors and class committees continue to improve the docking platform, so as to find and solve it in time.

(3) The teaching management department should establish strategic thinking and improve the management ability of using big data

First, divide and classify theoretical teaching and practical teaching, and explore a new mode of online practical teaching. Adjust a part of the teaching plan on the premise of following the laws of education and teaching during the delayed school start. The theoretical part of pure theory course or theory-practice integrated course adopts online course teaching, and its professional teaching plan, work practice, cognitive practice, on-the-job internship and practical teaching of other professional skills courses can be delayed until students return to school on weekends or shorten summer vacation.

Second, take a long-term view and think about problems comprehensively and systematically. The epidemic is a crisis and an opportunity. Higher vocational colleges should not waste any crisis, but should be good at finding opportunities and turning crises into opportunities. We should make full use of the opportunity of the epidemic situation, examine the problems and shortcomings of online teaching in schools, vigorously advocate and popularize online teaching mode, improve relevant teaching management systems and policies, and guide and encourage more teachers to transform into “online+offline” teachers.

Third, update the management concept and do a good job in service support. Strengthen the cooperation with the network teaching platform and its technical support parties, and provide alternative solutions to deal with unexpected situations such as system collapse. Teaching management departments should be fully prepared to provide teachers with online answering questions at any time.

Fourth, improve the effectiveness of big data technology in evaluating the quality of online teaching. “The key to the modernization of education management in the era of big data lies in the research, construction and application of big data” [7]. Online teaching is a new digital teaching mode. In essence, teaching activities are based on digital carriers, and these data can be stored, tracked, tracked and analyzed. Educational administration departments should be good at using these data, dynamically test the online teaching conditions, and guide and revise them in real time [8].

Fifth, continue to optimize online teaching norms

Organize departments to arrange famous teachers, backbones and the most beautiful teachers in the school, set up an online classroom teaching team of “department director+professional leader+teaching and research section director+lesson preparation backbone+technical service”,

select high-quality resources, and conduct lesson preparation content audit and online classroom trial lectures for teachers one by one. Technicians conduct pre-training of online classroom live broadcast simultaneously to ensure the smooth progress of online live broadcast in all directions. It is necessary to gradually promote “pre-class learning”, “online live teaching” and “after-class development” as the main links of online teaching.

5. Conclusions

The epidemic situation has pushed online teaching to the forefront. The problems existing in the implementation of online teaching in higher vocational colleges not only expose the deficiency of online teaching consciousness and ability, but also improve by summing up experiences and lessons. The school should not regard online teaching as a “quick repair” used during the epidemic, should not give up this teaching method, should have a long-term plan, be included in the daily teaching link, and vigorously advocate, encourage and support teachers to use the “online+offline” mixed teaching mode. Although online teaching and offline teaching have their own advantages and disadvantages, it is urgent and important to explore the teaching mode of combining them organically.

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