Research on online teaching operation mode of postgraduate courses

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Abstract. In order to effectively improve the online teaching effect of graduate courses, it is very important to plan the online teaching operation mode with the full help of information technology. This paper analyzes the characteristics and existing problems of postgraduate online teaching. In view of the characteristics and existing problems of online teaching, according to the teaching experience and the characteristics of postgraduate courses, this paper designs the teaching operation mode from the three aspects of teaching, auxiliary teaching and interactive platform, and puts forward the methods of developing online teaching from the three aspects of classroom teaching, course management and course assessment. This paper discusses the process of online teaching in detail, which provides a reference for the efficient online teaching of graduate courses.

1 Introduction

Postgraduate course teaching is an important part of postgraduate training. Optimizing teaching methods and improving course teaching effect has become a hot issue in training graduate students [1]. With the development of network, it provides a powerful tool for online teaching [2]. Based on online learning platforms, such as learning pass, nailing, Mu class, wisdom tree, rain class, etc, domestic college teachers carry on online teaching, provide teaching resources for postgraduates, and build a teaching and learning environment [2-4].

Online teaching operation mode is a great challenge for teachers, especially the online teaching operation mode after leaving school [5]. Mastering students' learning situation, carrying out classroom teacher-student interaction, effectively guiding graduate students' online learning and improving the efficiency of online learning have become the focus and difficulty of graduate teaching. Starting from the characteristics and existing problems of online teaching, this paper discusses the operation mode of online teaching of postgraduate courses and improves the effect of online teaching of postgraduate courses.

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2 Characteristics and existing problems of online teaching

2.1 Characteristics of online teaching

In the process of online teaching, there is a lack of communication between teachers and students. Students' satisfaction with learning materials, effect and communication is low [6]. Especially when graduate students leave school, online teaching loses the advantage of centralized learning in school. For learning in the school, according to the characteristics of curriculum knowledge, teachers can complete theoretical learning in the classroom. Teachers can choose to study in the laboratory, cooperate with relevant experiments to verify the theorems, laws and conclusions of the course, and complete the necessary practical application. Teachers can also choose on-site teaching and use their knowledge to analyze the on-site operation. In centralized learning, teachers and students are in the same time and space. Through face-to-face communication and interaction, teachers can timely grasp students' learning status, analyze students' learning effect, and then give corresponding guidance according to the actual situation.

In online teaching, the teaching and learning environment has changed, and all teaching activities need to be completed with the help of the network. Because of network speed and congestion, teachers and students are not synchronized when receiving information. In the process of teacher-student interaction, teachers or some students have announced the answers to the questions, while some students have not heard the questions. Unfortunately, the network failure directly leads to the inability of online teaching.

When leaving school, online teaching has become a decentralized learning state. Students are no longer learning with their classmates, without the learning environment, and can not see the figure of their classmates struggling. The mutual encouragement and learning competition between students is not obvious. Therefore, the learning atmosphere is weakened, learning inertia is enhanced, and learning efficiency is reduced.

In the process of online teaching, based on modern information technology means, through online teaching, video, discussion and other methods, students can arrange their own learning according to their own situation, which is not limited by traditional classroom. And students can easily study the key and difficult knowledge, so as to stimulate students' interest, strengthen students' memory, tap students' potential and cultivate students' ability. It can effectively improve the traditional teaching operation mode.

2.2 Existing problems of online teaching

In view of the characteristics of online teaching, teachers cannot supervise students' learning face-to-face, observe students' learning status, and ensure that students seriously complete the learning of relevant course contents. Because even if the teaching platform and online classroom show students online, and can count students' learning situation and learning progress, it can not guarantee students' learning quality.

In addition, online teaching has greater freedom. Many students can study online anytime and anywhere. As long as there are enough learning materials, students can arrange their own learning. If students do not study each course according to the curriculum arranged by the school, it will lead to great differences in students' learning progress of the same course, Finally, it will affect the completion of the course teaching plan. More importantly, online teaching focuses on students' learning. Students' learning depends on students' subjective initiative. If students lack self-control ability, leisure and entertainment will occupy most of the time. Therefore, the main problems in online teaching include learning time, learning progress, learning content and learning effect.

3 Design and practice of online teaching operation mode

In view of the characteristics and existing problems of online teaching, teachers need to make full use of information technology to plan the operation mode of online teaching, so as to effectively improve the teaching effect. In order to successfully complete the teaching tasks of the course, according to the teaching experience, the teaching operation mode can be designed from three aspects: teaching, auxiliary teaching platform and interactive platform, such as the teaching operation mode of "Tencent classroom + Yiersi platform + QQ group interaction". Carry out relevant online teaching from "classroom" teaching, curriculum management and curriculum assessment.

3.1 Classroom teaching

Classroom teaching is the basic form of teaching. High quality and efficient classroom teaching is the basic prerequisite to promote students' effective learning. In particular, theoretical courses cannot lack classroom teaching. Teachers need to explain in detail to help students understand the relevant concepts, basic theories and applications of the course. Considering the actual situation of online teaching, according to the teaching experience of many courses, classroom teaching should include online teaching, online puzzle solving, offline discussion and course homework.

(1) Online teaching

Online teaching is based on the teaching platform. For example, online course teaching is completed through "Tencent classroom". After students are online, teachers use the screen sharing and teach the course content. Online teaching means that teachers explain the contents of each chapter online, just as teachers and students study in the classroom. Considering the network situation and the review of students, it is best to record videos of all the contents of online teaching and upload them to the auxiliary teaching platform, such as uploading the videos to the "Teaching video" column of "Yiersi platform". Students can watch teaching videos anytime and anywhere as long as they log in to the auxiliary teaching platform. In this way, students can further study the relevant contents of the course repeatedly and selectively according to their own learning situation.

(2) Online puzzle solving

If students have doubts about the course content taught online by teachers through the teaching platform, they need to be solved in time, especially for theoretical courses. Using the "online puzzle solving" mode, students can leave messages online in time, students can also apply for online speech, and put forward their own questions. Then the teacher explains students' questions online. Online puzzle solving is convenient for teachers to solve students' puzzles in time in the "classroom".

(3) Offline discussion

Considering the characteristics of knowledge, it is not enough to only rely on online classroom learning, but also need "offline discussion". The "offline discussion" of the course is realized through the auxiliary teaching platform, such as "Yiersi platform", and both teachers and students can post or reply. Through off-line discussion, students can express their own views and see the views of other students. Therefore, it can not only help students understand the knowledge points of the course, but also expand the knowledge system of the course. It is also helpful to find the deficiencies in curriculum learning.

(4) Course homework

Course homework is also a very important link in course learning, which can be realized through the auxiliary teaching platform. Course homeworks are set according to the course content and the connection with other courses. Based on the course assignment, the students' ability is preliminarily cultivated to integrate the knowledge of this course and the

knowledge of this course with other courses. And the students' ability is also cultivated to use the relevant contents of this course to deal with practical problems. After students finish their homework, they need to upload it to the "Homework management" of the auxiliary teaching platform. Teachers can review students' homework online and upload comments.

3.2 Course management

The effectiveness of "Classroom" teaching is inseparable from "Course management", which is realized through auxiliary teaching platform and interactive platform, such as "Yiersi platform" and "QQ group". Course management includes sign in for class, online question answering, learning statistics and online test.

(1) Sign in for class

Class attendance can remind students to start class. For example, sign in for class through the collection form of QQ group. Before class, the teacher shares the collection form to the course QQ group, and then the students fill in their name. A collection form can record the time when all students pay attention to class.

(2) Online question answering

In order to master the students' mastery of the course content, when the online teaching is completed, students need to answer the questions related to the course content online and submit the answers through the interactive platform within the specified time, such as using the collection form of QQ group. According to the answers submitted online by the students, teachers can clarify the shortcomings of the students in this course, and it is also convenient for the teachers to correct or supplement the relevant contents in time.

(3) Learning statistics

Learning statistics can be completed based on the auxiliary teaching platform. For example, the "learning" option of "Yiersi platform" can count students' learning. Learning statistics can intuitively grasp the learning progress and learning distribution time of students' teaching courseware, teaching video and teaching materials.

(4) Online test

To further master the learning effect of students, online test tasks can be arranged based on the auxiliary teaching platform, such as "Online examination" of "Yiersi platform". It can directly clarify students' learning of relevant contents of the course. Moreover, online tests can encourage students to review and summarize course knowledge regularly.

Table 1. Assessment results.

Final exam results	Usual performance			
	Usual test	Homework and learning statistics	Online question answering	Offline discussion
60%	16%	11%	5%	8%

4 Assessment method

The assessment method also needs to be considered in online teaching. The assessment of course learning should reflect the students' learning process and effect. Students' learning process can be reflected by their usual performance, according to their participation or completion in each teaching link. The learning effect of students can be determined by the final exam. The final assessment results of the course should include the usual performance results and final examination results. The proportion is very important for the study of graduate courses. It is suggested that the proportion should be between 30% and 50%, as shown in Table 1. Usual performance is given according to online tests, offline discussions, course homework, online question answering and learning statistics.

5 Thoughts on online teaching

"Online teaching" is limited by time and space. Relying on modern information technology means and through the network, it can provide a variety of ways of "Teaching" and "Learning", which not only provides a guarantee for decentralized education and teaching in special circumstances, but also provides a new idea for traditional centralized education and teaching. It is a new challenge for every teacher. Teachers need to stimulate students' interest, tap students' potential, cultivate students' ability, and effectively improve the efficiency of online teaching in order to successfully achieve the teaching goal.

In the course of many online teaching, through the analysis of the actual situation of each link of teaching, some experience is summarized for online teaching. First of all, classroom teaching is very important. It is necessary to video the teaching content, so as to not only focus on learning, but also facilitate students' review. Secondly, curriculum management is very important. We need to implement some measures to supervise students' learning. Online learning may not be effective, and video viewing may not be effective.

The assessment form also needs careful analysis and mutual confirmation with the course management, so as to ensure the smooth completion of "online teaching" and improve the teaching effect. Moreover, according to the course characteristics and many aspects, the usual grades are set, which focuses on stimulating students' learning enthusiasm.

6 Conclusion

Online teaching has become a powerful guarantee for the implementation of graduate teaching, and has become an indispensable part of graduate teaching. Combining the characteristics of online teaching and courses, designing a suitable teaching operation mode is the fundamental guarantee for the successful completion of all teaching links. For the online teaching operation mode, the role of regular centralized learning, scientific curriculum management and reasonable assessment methods in effectively improving the teaching effect can not be ignored.

References

1. Changqing Shu, Du Kebing, Yaomei Ye, Nian Wang, Hua Wang. Higher Agricultural Education, **5**, 111 (2018).
2. Xiao Song. Science & Technology Vision, **16**, 146 (2020).
3. Chan Li. Computer Education, **5**, 16 (2020).
4. Jianhong Zhou. Information Technology and Informatization, **5**, 16 (2020).
5. Lin Tian, Yue Kou, Yinghong Fei. Shanxi Architecture, 6, 172 (2020).
6. Mi Tian, Yumeng Liu, Ling Gou. The Guide of Science & Education, **22**, 191 (2020).