

Discussion on the Blending Teaching Mode Against the Background of New Coronavirus Epidemic

—Taking the Course of “Urban Road Design” as an Example

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Abstract—Based on the teaching practice of “Urban Road Design”, this paper carried out the online-offline blending teaching practice against the background of new coronavirus epidemic. It discusses the implementation process of this teaching mode from three stages: before class, in class and after class, and makes practical reflection. The study suggests that although there are still some problems in the teaching mode, the teaching and learning experience will have a profound impact on the teaching reform after the end of the epidemic.

Keywords—new coronavirus epidemic; blending teaching; practice; discussion

I. INTRODUCTION

With the continuous advancement of education informatization construction and the rapid development of MOOC construction, research on the blending [1] teaching model that combines traditional teaching and MOOC is more and more in-depth. Against the background of the new coronavirus epidemic, the conventional online-offline blending teaching mode [2] is difficult to implement smoothly. All kinds of schools at all levels in China have actively implemented the

work arrangement of the Ministry of Education, which calls for “suspending classes but not stop teaching, and suspending classes but not stop learning”. Teachers and students all over the country attend the “cloud” classes and actively carry out online teaching. Although this is an inevitable choice against the background of the new coronavirus epidemic, it is the unique education and teaching reform movement with such a large scale in China’s history, and is a rare opportunity for the deep integration of modern educational technology and classroom teaching. Combined with the online teaching practice of “Urban Road Design”, this paper is devoted to exploring the learner-centered online-offline blending teaching mode.

II. ONLINE-OFFLINE BLENDING TEACHING PRACTICE

In the situation of new coronavirus epidemic, the teaching mode of “Urban Road Design” adopts online-online blending teaching mode of students learning online+ teachers teaching online via live+ teachers guiding and answering online, as shown in Table I:

TABLE I. ONLINE-OFFLINE BLENDING TEACHING MODE

Teaching procedures	Teachers	Communication ways	Students
Before class	Analyze teaching objectives Design teaching resources Release learning tasks	The network teaching platform of Superstar Fanya Learning Through of Superstar (mobile app) QQ groups	Watch the course video Learn PPT lesson plans Complete pre-class test Exchange learning questions
In class	Live lecture key points Answer students’ questions Analyze difficulties of assignment Organize classroom activities	The network teaching platform of Superstar Fanya Tencent Conference QQ groups	Feedback question Internalize knowledge Classmate discussion Teacher-student interaction
After class	Online Q & A Assignment feedback Personal guidance View platform data Continuous improvement	The network teaching platform of Superstar Fanya Learning Link of Superstar (mobile app) QQ groups	Review knowledge Check and make up for deficiencies Finish assignment Post discussion

Fund Project: The key research project of higher education and teaching reform in Jilin Province in 2018--“Construction and Practice of Blending Teaching Mode Based on SPOC”; the research project of higher education and teaching in Jilin Province in 2018--“Research and Practice of Undergraduate Tutorial Training Mode Based on Professional Course Teaching” of Jilin higher education teaching research project in 2018; the demonstration course construction project of “Curriculum Ideology and Politics” of Changchun Institute of Technology in 2018--“Road Survey and Design”.

A. Construction of Teaching Resources

The course resource construction of “Urban Road Design” mainly adopts two ways: the introduction of high-quality network resources and teachers’ self-construction resources.

The online resource selects the video of excellent course “Road Engineering” of the MOOC in Chinese universities as the preview resource for students. The video content and the content of the course material reach 98% agreement, which is very suitable for students to learn online. The self-construction course resources are built on the basis of the Superstar Fanya Network Teaching Platform (or Superstar Learning Link). The self-made teaching resources of the teachers include PPT courseware, handouts, Word documents, test database, assignment library, and extracurricular knowledge resources, which can provide students with diverse and focused learning contents to facilitate the different needs of students with personalized learning and provide effective support for students’ autonomous learning.

B. Practice of Teaching Activities

Before class, teachers assign the pre-class task list to guide the students to effectively carry out the pre class preview and complete the corresponding assignment, and they can check students’ preview progress and task completion status at any time. Before class, students can check the learning tasks, learn the course videos and PPT lesson plans, and complete the pre-class tests. For some questions, you can communicate with teachers timely through the learning link or platform. The teachers will categorize the collected questions and answer the individual comprehension questions directly in the QQ group in writing before the live broadcast of the class. For the problems that are universal and suitable for extensive discussion, they will be released to the students in advance on the platform in the form of notice, so that students can think and prepare, and discuss through the teacher-student and student-student online interaction, or highlight in class teaching.

In class, teachers teach by means of Fanya Network Teaching Platform + Tencent conference + QQ group, and students can log in to Fanya network teaching platform (or

superstar learning link) for learning and can participate in classroom activities such as answering questions, selecting students and discussing. The development process of classroom teaching activities is as follows: In the first five minutes, students give feedback of the unsolved questions in the pre-class learning process to the teachers; Then, the teachers will spend about 20 minutes focusing on teaching students the difficult points and knowledge details to complete the transfer of knowledge and skills, and the students constantly reflect and internalize knowledge in the process of lecturing and explanation of the teachers; In the next fifteen minutes, the teachers test the students’ learning effects by asking students to answer, quick answering, discussion and class test. And in the process of teacher-student interaction, students’ emotional attitude and values will be sublimated. In the last five minutes, the teachers will make a summary of the class and explain the key and difficult points again, and the students will constantly summarize and reflect on the learning content to complete the deep learning of knowledge.

After class, students need to use the network platforms and online resources to learn and complete the assignment, and communicate with teachers online; meanwhile, teachers can fully understand the learning situation of each student through the statistical data of the network platform and the class performance of the student (in the past teaching mode, it is difficult for teachers to fully understand the students’ learning state), reflect and summarize the problems raised by students before class and in class, and timely adjust the teaching design before class and in class in terms of the students’ performance and reaction in class and the difficulties in the learning process to continuously improve the teaching.

C. Teaching Effect

1) Students’ comprehensive performance

The assessment method based on the final exam cannot fully reflect the students’ knowledge mastery. This teaching combines the data of the learning platform to include students’ online learning process scores into the final assessment. The weight setting of each part is shown in Table II.

TABLE II. ONLINE-OFFLINE BLENDING TEACHING MODE

Items	Proportion	Remarks
Assignments	18%	Average score of all assignments
Class participation	10%	Corresponding scores can be obtained by participating in voting, questionnaire, replies, selection, discussion, group task and other course activities.
Sign in	2%	Cumulative by times, each sign in plus 1 score
Chapter test	7%	The average score of chapter test is calculated as task point, and the score of chapter test without test is calculated as "0"
Chapter learning times	3%	64 times of chapter learning is the full score
Discussion	10%	3 points for posting or replying to a discussion, 1 point for 1 like, and the highest score is 100 points
Final exam	50%	Final exam grades

According to the above assessment method, the final comprehensive score distribution of the students is as follows: a total of 90 students in two classes, 38 students with 80-90

points, 45 students with 90-100 points, with an average score of 87.42 points, which is obviously higher than the final score of students in the offline teaching over the years, especially the

number of students with 90-100 points is larger. It is analyzed that this is mainly because the online teaching has increased the proportion of usual grades, and the completion rate of students' assignment, discussion, check-in, and chapter tests are all higher, so the total score of the course is higher.

2) Questionnaire results

The results of the questionnaire show that 89.3% of the students are willing to adopt the online teaching mode in the course of Urban Road Design, believing that this teaching mode can increase their learning interests; 92.9% of the students think that the learning resources on the online platform can help them understand and master the knowledge of the course; 96.4% of the students think that this learning method has a greater degree of freedom for learning so that students can arrange their own online learning time; 100% of the students think that the blending teaching mode can preview the course content in advance, and facilitate the interaction between teachers and students in class, so as to better understand and master knowledge, of which 54.8% think it is very capable and 45.2% think it is relatively capable; 94% of students think that the process of online self-study can have sufficient thinking time, which is conducive to the in-depth study of knowledge.

III. REFLECTION ON ONLINE-OFFLINE BLENDING TEACHING MODE

The online-offline teaching practice during the epidemic is not only a good opportunity for students to improve their self-learning ability, but also a rare opportunity for teachers to better adjust the relationship between "teaching" and "learning". This practice of blending teaching mode has not only gained good experience, but also exposed some shortcomings.

A. Superiorities

1) Have good preview effects before class

Students preview the knowledge points before class and complete the test assignments which can help students get familiar with the knowledge points of the course in advance, and communicate with the teachers in time; Teachers can find out the outstanding problems encountered by students in the preview according to the questions of feedback in the Learning Link and their answers to self-test questions in preview, and discuss these problems in class, so as to conduct targeted guidance and teaching, and help students answer questions and solve puzzles. It is shown in the questionnaire that 64 of the 85 students in the class think that preview the class content in advance is good for classroom listening.

2) Enrich the way of performance assessment

Students can get points by completing the preview tasks, chapter tests and assignments of the platform, and participating in classroom activities such as quick answering questions, selecting people and discussing, which can be included in the final performance assessment. It is an important measure to urge students to strengthen their daily study by including the evaluation of students' learning process into the final examination, which can effectively restrain students' "cramming for the tests" in traditional teaching.

3) Easier to concentrate students' attention in class

In the live teaching, most students can better answer the teacher's questions through the participation effect of quick answering questions and selecting people, which reflects that students in front of the computer or mobile phone screen are easier to concentrate on listening than sitting in the large classroom. In the traditional offline classroom, students sitting in the back row are far away from teachers and blackboard, which is easy to distract attention. According to the questionnaire, 77 of the 85 students in the class think that the page is clear and easy to understand when listening to the lecture on the computer screen, and teachers organize activities such as answering and selecting people at any time, so it is not easy to slip away from the class.

B. Deficiencies

1) The teaching effect of network platform is not stable

The blending teaching mode has higher requirements for information technology. In the early stage of the epidemic, the large-scale online teaching made most of the teaching platforms in China overloaded, which was close to collapse from time to time. In the later stage, teachers and students adjusted the choice of teaching platform in time, and the situation improved. However, due to the school has not yet unified basic standards of using what kind of platform or software to teach and live interact, and students need to install multiple platforms or software on their mobile phones, which often leads to the phenomenon of pause, slow speed and offline in the process of listening, which seriously affects the fluency and quality of online teaching.

2) Lack of effective organization ways in interactive links

Against the background of outbreak of epidemic, many courses have completed the construction of curriculum resources in a short time, but the design of the overall teaching process needs to be improved, especially the classroom teaching is still lack of effective interactive link [3] and organization mode of discussion process. Many professional theoretical foundations and basic courses with strong theories have many concepts, many formulas, relatively abstract and difficult to understand. In the process of online teaching, teachers need to meticulously design effective interactive links and organization methods of discussion process.

3) Statistical analysis of teaching data monitoring is not in-depth

Due to the various sources of online teaching resources and the different forms of live broadcast software and online interaction used by teachers in classroom teaching, teachers cannot master all the state data of students' learning process, and some interactive statistics data between teachers and students cannot be timely and effective recorded, resulting in the school cannot monitor and analyze the status data of the entire teaching process for the continuous improvements.

IV. CONCLUSION AND SUGGESTION

During the epidemic period, colleges and universities all over the country are actively exploring a variety of network teaching modes. Teachers and students have broken through the space and overcome the difficulties. Although there are still

various problems, the experience gained in teaching and learning will certainly have a profound impact on the teaching reform after the end of the epidemic. Combined with the practice of online-offline blending teaching, the following suggestions and measures are proposed:

A. *Combine Selection with Construction, Meticulously Design and Improve Teaching Resources*

Students need to participate in online learning activities of multiple courses at the same time, so the learning pressure is great. Teachers should collect excellent courses from MOOC of Chinese universities and the platform of Superstar Fanya, and elaborately select and integrate the teaching resources that meet the course objectives and meet the demand of students' learning ability and development level [4], and further carefully design self-built teaching videos, teaching courseware and unit tests and assignments, and constantly improve teaching resources, so that students can obtain important knowledge points of this course in the learning tasks as little as possible.

B. *Teach Only the Essential and Ensure Plenty of Practice to Give Full Play to Students' Subjective Initiative*

The teacher should refine the main knowledge points of each lesson carefully and guide the students to preview the key points before class; In class, they should teach the key and difficult points through cases, pictures animations and other flexible forms, design interactive links of questioning and discussion to attract students' attention and inspire students' interests, and leave more time for students to increase their participation; After class, they should answer questions and give guidance in time to ensure the effectiveness and interactivity of teaching, so as to give play to students' subjective initiative and promote students' continuous progress and self-improvement.

C. *Meticulously Design and Effectively Organize Online Interaction*

In the teaching process, teachers should flexibly use the technology of the network platform and adopt various classroom interaction methods [5]. Apart from the activities such as rushing to answer and selecting people, they can also replace oral interaction by voting and bullet subtitles, or conduct in-depth communication and discussion on some issues in the form of video conference. These interactive methods may not be as fast-paced, enthusiastic and rich in content as on-site discussions, but if we can use them properly, students can still feel the positive and enthusiastic interactive discussion experience.

D. *Standardize the Selection Standard of the Platform and Strengthen the Monitoring and Statistical Analysis of Teaching Data*

Schools should further strengthen the construction of software and hardware infrastructure of modern educational technology, summarize online teaching experience during epidemic period, standardize the selection standards of platforms, and improve the functions of teaching platforms and mobile teaching apps to ensure the stable operation of online teaching. They should formulate the standards and methods of online teaching supervision and evaluation [6], organize teachers to timely and effectively collect the teaching status data of the platform, strengthen the platform data monitoring and statistical analysis, timely grasp the teaching and learning effect, and continuously improve teaching.

In general, against the background of new coronavirus epidemic, the nationwide online teaching reform practice has played a great role in promoting the ability of college teachers to carry out teaching with modern education technology, improving students' self-learning ability and enhancing the level of teaching informationization in colleges and universities, which has a milestone significance in accelerating the leapfrog development of the educational informatization reform in China.

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