Research and Practice on the Construction of Online and Offline Hybrid First-class Courses of Big Data Analysis

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Abstract: *The implementation of curriculum teaching reform also needs to rely on classroom teaching, and the first-class curriculum construction standard in the national "Double Thousand Plan" has pointed out the direction of reform. According to the characteristics of the "Big Data Analysis" course, the adoption of online and offline mixed teaching mode will on the one hand make up for the shortage of teaching hours, and on the other hand, it is more important to truly realize "student-centered". He Kekang, a professor at Beijing Normal University, was the first official advocate of blended teaching in China. He believes that the blended teaching mode combines the advantages of traditional teaching methods with the advantages of networked teaching, which not only gives full play to the leading role of teachers in guiding, inspiring and monitoring the teaching process, but also fully reflects the initiative, enthusiasm and creativity of students as the main body of the learning process. Blended teaching here is blended learning.*

Keywords: *Big Data Analysis, Online and Offline, Hybrid First-class Courses, Research and Practice, independent study, case selection*

1. Introduction

How to give full play to the advantages of traditional offline teaching and online teaching? It is not a simple accumulation and mixing, but an organic integration, giving play to the effect of $1+1 > 2$ is the core pursuit of future online and offline integrated teaching.

1.1. Connotation of blended teaching mode

In recent years, with the rise of MOOCs, the blended teaching model has taken on new connotations[1-2]. The Flipped Classroom, one of the most powerful means of enhancing MOOCs, combines online learning with offline discussions -- where students gain preliminary knowledge online through videos pre-recorded or assigned by instructors -- and then study in class with instructors on questions they don't understand or have doubts about[3]. It is designed to maximize the learning effect of students. The basic idea is to turn the traditional learning process over, let learners complete the independent learning of knowledge points and concepts in the extra-curricular time, and turn the classroom into a place for interaction between teachers and students, which is mainly used to answer doubts, report and discuss, so as to achieve better teaching results[4-6].

In short, blended teaching is the combination and complement of online learning and traditional classroom teaching, which not only plays the leading role of teachers, but also reflects the subjectivity of students, so as to achieve better teaching results[7].

1.2. Main differences between online teaching and offline teaching

For the integration of online and offline teaching, we must first analyze the essential differences between offline teaching and online teaching[8]. Offline teaching has the form of teachers teaching students listening to lectures, but also has the form of teachers and students talking together, doing experiments, completing project tasks, full of challenges and innovation. Online teaching has a self-learning mode through online answers, statistics and feedback, a self-adaptive learning mode based on students' various learning data diagnosis and push personalized learning resources, a form of students

watching unified recording video, a form of simultaneous live teaching between teachers and students, and a form of watching recording video and offline interaction[9].

1) Characteristics of online teaching

Even such a simple and preliminary online teaching method has some unique advantages that offline teaching is difficult to have[10,11].

Precision. Every link, expression, speed of speech, questions, exercises and activities are carefully designed and polished, and the videos are short and concise to ensure scientific and logical.

Controllability. Through shooting technology, cutting processing technology, it can be repeatedly corrected; There is no need for teachers to respond too much to on-site teaching; Ensure the integrity and appropriateness of each lesson language, text, picture, requirements, etc.

All-media learning. It combines various forms such as explanation, music, animation, video and character simulation to meet students' various cognitive styles.

Short and to the point. A micro-video can be strung together by a "chain of questions", each question 3-10 minutes; An abridged lesson is limited to about 20 minutes. Students can play and learn repeatedly through on-demand, review and other ways; Teachers can use it as a whole or choose to cut parts and use it repeatedly.

2) Advantages of online teaching compared with offline teaching

Compared with offline teaching, online teaching has such unique functions as rich learning resources, anytime, anywhere, personalized learning, independent learning, differentiated learning, data diagnosis and analysis, personalized resource push, and particularly significant learning effect on knowledge and skills. Online teaching can also not be limited to a fixed class size; Different learning progress can be adopted, so that students with different learning abilities can choose the corresponding learning content and resources; It can learn and consolidate repeatedly through on-demand and playback of relevant video resources, which satisfies the different learning needs of different students who need different learning time for the same learning content.

It can be seen that online teaching and offline teaching have their limitations, but each has unique advantages that cannot be replaced.

2. The basic mode of online and offline mixed teaching

It is precisely because online teaching and offline teaching have various content forms, with different advantages and disadvantages, which brings various possible patterns for online and offline integrated teaching. How to give better play to the unique advantages of online teaching and offline teaching, teach students according to their aptitude, more effectively achieve "five education simultaneously", and comprehensively improve the quality of education is the value pursuit of online and offline integrated teaching.

2.1. Complementary patterns

Online knowledge and skills learning, offline interactive activities, problem solving, etc.

The complementary model reflects the complementarity of different training objectives and teaching contents online and offline. In this mode, teachers can prepare micro-videos and learning resources recorded by themselves explaining relevant knowledge and skills in advance, so that students can watch, study and practice in advance before class. In class, students can mainly organize students to use relevant content for interactive cooperation, exchange and display, hands-on practice, project tasks and other learning activities, and cultivate students' ability to solve problems, cooperate and communicate.

The complementary mode not only ensures the precision of knowledge and skills explanation, but also ensures the adequacy, depth and effectiveness of learning activities, gives full play to the unique advantages of online and offline, and is more conducive to promoting the overall improvement of education quality and realizing the "five education simultaneously". Of course, this mode has high requirements on students' self-learning ability, teachers' ability to produce or select high-quality video resources and organize high-quality offline learning activities.

2.2. Reinvent the transformation mode

A variety of learning resources are provided online for students to study on their own, and offline individualized tutoring.

In fact, the transformation mode reflects the idea of "learning before teaching". This mode suggests that teachers prepare various learning resources in advance, which not only point to the learning of knowledge and skills, but also include the completion of various project tasks, etc., which rely on students' independent learning to complete the corresponding tasks, and teachers conduct one-to-one diagnosis and guidance offline according to the students' completion status and progress.

Under the transformation mode, the learning resources designed by teachers online should be very rich and reflect various educational goals. This mode can give full play to the advantages of one-to-one instruction learning, such as pertinency and timely feedback, but it requires teachers to prepare various online learning resources, evaluate diagnosis and individual guidance ability.

2.3. Collaborative model

Online for the relevant content with the best teachers, offline guidance and evaluation.

The cooperative mode actually reflects the complementarity between different teachers' abilities and gives play to the advantages that each teacher is best at. Obviously, the cooperative mode almost has the advantages of complementary mode and transformation mode, which can not only give full play to the strengths of each teacher, but also give full play to the unique advantages of online and offline, and give full play to the effect of $1+1 > 2$.

3. Two implementations

3.1. Construct three-dimensional teaching resources and carry out mixed teaching online and offline

In order to better cultivate application-oriented talents, first of all, according to the requirements of the new liberal arts, the corresponding knowledge, ability and quality requirements are sorted out, and then the teaching content is reorganized, so that each teaching unit has a clear theme, a moderate amount of knowledge and related knowledge points, and each unit is relatively independent, which is conducive to building three-dimensional teaching resources and using the resources of the learning platform.

The implementation of curriculum teaching reform also needs to rely on classroom teaching, and the first-class curriculum construction standard in the national "Double Thousand Plan" has pointed out the direction of reform.

3.2. Select ideological and political elements and integrate them into professional education

Teaching reform must adhere to the "moral cultivation is the fundamental task of education", dig deeply the ideological and political education resources contained in the curriculum, realize the guidance of ideology and value, and give play to the educational function of professional courses. Centering on the ideological and political elements such as socialist core values, the spirit of a powerful country in science and technology, professional quality, scientific research spirit, and the overall view, we will sort out the appropriate course knowledge points, excavate relevant ideological and political cases, and integrate them into classroom teaching to achieve professional ideological and political education.

4. Conclusions

"Big Data Analysis" is a highly practical course. The basic concepts, grammar, skills and methods must be mastered through repeated practice, and the experimental teaching should be improved for students' weak hands-on ability.

4.1. Ensure the number of computer courses

The traditional teaching mode is based on theory and supplemented by machine, which is beneficial for cultivating scientific talents, and also suitable for students with solid foundation and strong initiative, but it is not suitable for cultivating application-oriented talents, who need to strengthen practical

operation. The special point of front-end development course is that some knowledge can be mastered with more practice and frequent use, and it is necessary to increase hands-on practice.

4.2. Improve the quality of computer courses

To improve the quality of computer lessons, we must carefully design computer experiments. According to the training requirements of application-oriented talents, closely related to knowledge points and practical application scenarios, representative examples with moderate difficulty are selected as experimental questions. Students are allowed to choose comprehensive and design experimental questions by themselves, and the teachers check them. Students are often more responsible for self-selected topics. When they can see the results within a certain time, they will have a sense of accomplishment, gradually enhance self-confidence and improve learning interest.

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