Exploration on the Mixed Teaching Mode in Colleges and Universities

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Abstract—The traditional teaching mode has some disadvantages, such as students' lack of interest in learning and innovation ability, while the single online teaching mode has some shortcomings, such as the inability to equip perfect equipment. The mixed teaching mode can learn from the traditional teaching mode and online teaching mode, effectively promote the two-way communication between teaching and learning, and is conducive to the teaching reform of colleges and universities. First of all, this paper analyzes the disadvantages of traditional teaching mode and online teaching mode. At the same time, it analyzes the existing problems of mixed teaching mode. Finally, two mixed teaching models and their implementation methods are proposed.

Index Terms—Information, mixed teaching mode, online teaching, offline teaching, practice

I. INTRODUCTION

Higher undergraduate education shoulders the mission of cultivating research and application oriented talents for the society, and plays an extremely important role in the whole school system. The main way of education is teaching. The arrival of the age of Internet, information and intelligence has endowed education with the energy of science and technology, and promoted the teaching methods of school teachers to become more and more diversified. In order to achieve better teaching effect, teachers began to try various teaching methods, such as problem guidance, project discussion, case analysis, flipped classroom, etc. At the same time, the online learning resources available to students are becoming more and more colorful. In this way, the teaching ability of teachers is also put forward higher and higher requirements. How to create a new era of education philosophy in the "Internet plus" education era, so that students can achieve entertaining and complementary advantages through online self-study, offline improvement, practical testing, drawing inferences from one instance and other links, becomes the exploration direction of the new teaching model in the future.

II. PROBLEMS IN TRADITIONAL TEACHING MODE AND ONLINE TEACHING MODE

The traditional classroom teaching mode refers to a pure offline teaching mode conducted in the physical classroom. Generally, there are two modes: one is the mode of "teaching" by teachers, the other is the mode of "listening" by students and face-to-face teaching; the other is the flipped classroom mode, which has improved the teaching efficiency compared with the previous one, but it is still a pure offline teaching mode, which fails to effectively use the network resources.

The traditional teaching mode has the following problems:

1. Students accept knowledge passively and lack learning initiative

In the traditional classroom teaching mode, teachers transmit knowledge and students receive knowledge passively. As a cognitive subject, students have a passive position and poor initiative. They often have few knowledge points to remember and master at the end of the course.

2. Pay too much attention to the teaching of book knowledge, which is out of line with the job demand

In the traditional classroom teaching mode, teachers mainly impart knowledge from books, lacking the cultivation of practical ability. When students graduate to apply for jobs, they see the job needs of employers, especially when they need to have actual project development experience. They feel that they have not done projects and lose their confidence in applying for jobs.

3. The access to learning resources is convenient and rich, resulting in boring and backward teaching content

In the era of "Internet plus" education, various online learning resources are rich and colorful, and you can learn what you need anytime, anywhere. Some self-conscious students will take the initiative to learn interesting knowledge or required knowledge through the network. Most students have much more knowledge and information than students in the non-network era. Therefore, teachers are facing great challenges in teaching. Pure knowledge points are not only boring, but also behind the times and the pace of students' learning, which greatly affects all teaching links.

The teaching process of a single online teaching mode is mainly that teachers upload preview materials to the learning software platform before class, students obtain materials from the platform for preview, teachers use the learning software for live teaching in class, and homework is arranged online after class.

The single online teaching mode also has some problems:

1. Unable to effectively supervise students' attendance

Online teaching mode is not face-to-face teaching between teachers and students. Teachers can't keep track of students' classroom situation in real time. For example, during online teaching, some students may not be listening to the class although they have completed online check-in. Teachers cannot monitor students' listening in real time. Some teachers will ask questions and increase interaction to check whether students are listening. Even so, it is still unable to comprehensively and effectively supervise students' listening.

2. Problems caused by unstable network connection

Online classes depend on the Internet and are greatly affected by the speed of the Internet. If the network connection is unstable, it will lead to intermittent sound, video image and PPT page turning stuck or picture loss, which will greatly affect the students' classroom experience, and thus affect the teaching effect.

3. The practical operation link cannot complete the offline computer room practical operation effect

Some courses are highly practical, and students' computer operation is essential, requiring students to complete relevant tasks by hand programming. In the pure online teaching mode, due to the lack of practical environment, students cannot operate as they do in the training room, and teachers can also not patrol, answer questions and solve problems. Online practice can only be demonstrated by teachers through live operation code, and students follow the imitative operation in front of the screen.

4. Lack of immersion in offline teaching and efficient interaction

At present, no matter how developed the network is, it is still limited to vision and hearing, and has a distance across a layer of screen. Therefore, it lacks the sense of immediacy and instant vision. At the same time, the listening effect is not comparable to that offline, so online teaching method is more suitable for students to learn materials by themselves, and the effect of interaction, discussion and question answering is not good. [6] examined the development and refinement of possible mathematical models for the intellectual system of career guidance. Mathematical modeling of knowledge

expression in the career guidance system, Combined method of eliminating uncertainties, Chris-Naylor method in the expert information system of career guidance, Shortliff and Buchanan model in the expert information system of career guidance and DempsterSchafer in the expert information system of career guidance method has been studied. The algorithms of the above methods have been developed. The set of hypotheses in the expert system is the basic structure of the system that determines the set of possible decisions of the expert system. This set, which is crucial in decision-making, should be sufficiently complete to describe all the possible consequences of situations that arise in the subject area. Therefore, it is important to improve the mathematical models of the intellectual system of career guidance.

III. DISCUSSION ON MIXED TEACHING MODE

A. Current situation of mixed teaching mode

Since the late 1990s, blended teaching has entered the vision of domestic and foreign researchers. So far, the concept of mixed teaching has gone through three stages. In the early days, the Sloan Alliance of the United States proposed that blended teaching was traditional face-to-face teaching and online learning. In 2007, the Sloan Alliance of the United States updated the concept, and proposed that 30%~79% of the teaching contents adopt the online teaching method, which is called hybrid teaching. At this stage, scholars focus on the interaction between face-to-face teaching and online teaching between teachers and students, students and students, and students and resources. Later, in the context of "Internet plus", the concept of hybrid teaching was enriched as a teaching situation based on mobile communication equipment, online learning environment and classroom discussion. At this stage, the scholars changed the perspective of research from technology and teachers to students, emphasizing the mixing of teaching and counseling in a "student-centered" learning environment. Mixed teaching does not simply transform part of the offline teaching content into online, nor does it put the endless content in the classroom online. Mixed teaching is a teaching method that combines the advantages of online teaching and offline teaching. Through the combination of the two forms, learners will be led to in-depth learning.

The rise of "offline+online" hybrid teaching mode has greatly improved the effect of classroom theoretical teaching, but this hybrid teaching mode also has its own limitations. In the questionnaire survey on students' analysis of the drawbacks of mixed teaching at this stage according to their own experiences, it was found that "time spent watching computers or mobile phones" accounted for 71.56%, "students' attention was easily distracted" accounted for 75.52%, "classroom supervision difficulties" accounted for 60.14%, and "teaching effect is difficult to guarantee" accounted for 53.38%. According to the survey on the effect of mixed teaching, 47.09% of the students have "maintained a normal attitude" towards the implementation of mixed teaching, 35.2% of the students have made "satisfactory"

evaluations, 10.26% of the students have made "very satisfactory" evaluations, and 45.46% of the total of the two items. The data is close to the proportion of students who have made "ordinary" evaluations, 5.83% of the students have made "dissatisfied" evaluations, and 1.63% of the students have made "very dissatisfied" evaluations. According to the survey results, there are many problems in the current mixed teaching. For example, in online teaching, because teachers are difficult to supervise students, there is no active discussion and truancy; the condition of school informatization is not perfect. The students' subjective initiative for learning is not strong, and they do not understand the nature of mixed teaching. The solutions include: standardizing students' learning attitude, improving the teaching management system and carrying out standardized education, promoting students to improve their self-discipline, and helping students establish good living habits. The education and training will improve the mixed teaching level of teachers, reasonably arrange the teaching progress, and help students improve the learning effect significantly. The online teaching platform provides more functions to support the feedback and communication of interactive teaching, and enhances the reliability of the system, so as to ensure the smooth implementation of hybrid teaching. In short, colleges and universities need to improve their teaching models, change their thinking, maximize their strengths, and further refine the offline and online hybrid teaching models. [7] discussed about specific Policy document which ensures of which the teaching, learning in addition to assessment methods are upwards to the amount of typically the course and are ideal to the attainment involving objectives and intended understanding outcomes of the program and the course. The particular policy requires that school members use recent in addition to variety of teaching, mastering methods and assessment methods. Higher Quality Accredited Institutions will continue to further more improve the standard involving teaching and learning via recognition, sharing and moving of good practices to be able to inspire the learners to be able to achieve their potentials throughout a multicultural environment in addition to in turn, improve accomplishment, retention and learners pleasure.

B. Online offline online hybrid teaching mode

The emergence of the Internet has added an online education link to the hybrid teaching model, greatly enriching the teaching methods and bringing new reforms to education. Taking the courses of information specialty as an example, each course is divided into three stages: pre class, in class and after class. The mixed teaching mode of "online offline online" is used to design the courses, and the mixed teaching mode of online, offline and online has evolved.

1. Online course design (before class)

Before class, the teacher will release the knowledge point PPT, video learning materials and test questions needed for class on the course platform; Students learn by themselves and complete the test on the course platform. Teachers can find common problems according to the test questions that students have completed.

2. Offline course design (in class)

Offline teaching is conducted face-to-face in the training room, and the whole offline classroom teaching is completed through the following five steps.

(1) Problem discussion

In classroom teaching, teachers start a class by discussing problems. The problems discussed come from three aspects: ① The students learn to complete the common problems found in the test by themselves; ② Problems arising from the expansion task of the previous lesson; ③ In this class, students complete the questions introduced by the "project task".

(2) Project practice

Lead out project tasks according to (1) problem discussion results. In order to apply self-study knowledge points before class to practical projects, teachers need to: ① break the task into small modules; ② Draw a mind map, mark the knowledge points required for each small module, and focus on the key and difficult points of knowledge; ③ Finally, draw the flow chart, write the code, and realize the development task.

(3) Patrol inspection

When students are writing code and debugging programs, teachers are patrolling in the computer room. Among them, one-on-one guidance and puzzle solving will be carried out for personalized problems. For common problems, teachers will give unified explanations in class. The following are examples.

① Personality problems: For example, when reading file data and presenting tasks with pie charts, it is found that individual students have error messages when running programs. We gave one-to-one guidance to the personality problem, and solved the problem according to the idea of "understanding the meaning of the error prompt information - locating the wrong code line - modifying the code - re running the program - testing results".

② Common problem: When the generated file is opened, the pie chart is not loaded normally, and the page is blank. The whole class has this problem. In the face of this common problem, focus on the analysis and explanation in the classroom. By analyzing the source code of the file webpage, it is found that the pie chart can be loaded normally only when it is connected to the Internet. The module in the library can solve this problem. Add the following two lines of code at the top of the code, re run the program, open the newly generated file, and the pie chart is successfully loaded and displayed.

(4) Comment and summary

After the inspection, the teacher will comprehensively comment and summarize the key knowledge points, attention points, and easily overlooked problems according to the students' project completion.

(5) Typical case review

Finally, the teacher will analyze and explain the excellent programs and programs that need more improvement by

means of review, and form written documents for preservation. Taking the above-mentioned common problems as an example, the reexamination process is introduced.

3. Online course design (after class)

After class, the teacher will release the expansion tasks that need to be completed to the curriculum platform, so that students can independently complete them on this platform, so that they can learn to draw inferences from others, learn to use flexibly, and achieve the goal of developing similar projects independently.

Online offline online teaching mode can improve students' learning efficiency; through the closed loop of students' online self-test, the self-test cycle of students' mastery of knowledge is shortened; through the guidance of individual problems and common problems, the problems left by students in learning and the details ignored were solved in time. Through review and analysis, students can learn from the past and learn new things again, enhance their grasp, application and memory of knowledge points, and consolidate their knowledge through expanding tasks and further application, so as to draw inferences from one instance and gradually learn and apply knowledge.

C. Mixed teaching mode of online+offline+practice

The "practice" in the hybrid teaching mode of offline+online+practice refers to that when teachers teach each course, students are allowed to learn theory and practice at the same time according to the teaching content and practice links, so as to achieve the ultimate training purpose, cultivate the compound talents who focus on theory and practice, and thus have more competitive advantages in the fierce market competition.

Practice not only includes case drills, situational discussions, laboratory experiments, etc., but also includes social practice, that is, to bring the learned content to the enterprise in time, and to apply theories and skills to solve problems according to the needs of enterprise production and operation, so that students can verify theoretical knowledge and consolidate learning effects on the one hand, and understand social needs through practice on the other hand, so as not to be useless, It has caused a passive situation of serious decoupling from the demand for social talents.

There are three ways to combine practical teaching with online and offline theoretical teaching:

1. Synchronize theory with practice

The advantage of synchronous teaching is that students can more intuitively and deeply understand the key points of the knowledge they have learned, master the scene of the application of theoretical knowledge in real society at the first time, and know what they have learned, where they can apply it, and what problems they can solve. The teaching mode combining theory and practice of problem solving can stimulate students' interest in learning, and is very helpful to cultivate students' creative thinking and execution.

2. Practice follow-up after the completion of theoretical link

Compared with the synchronous teaching mode, the follow-up teaching mode lacks the flexibility of synchronous

learning of theory and practice, and the ability to intuitively reflect the students' understanding and application of knowledge points. However, the advantage is that students can focus on solving problems in later practice with many problems, and the practice is more purposeful.

3. Practice before Theory

The teaching mode of "practice before theory" can enable students to understand the purpose and application development direction of the major first, and then supplement and understand the theoretical knowledge with pertinence and interest.

Whether the mixed teaching mode of offline+online+practice can be successfully implemented lies in the following difficulties: first, how to reasonably allocate the teaching links of theory and practice; Second, where to practice. For these two difficulties, we can solve them from the following aspects:

1. University leaders and superior competent departments need to attach great importance to it, support enterprises to recruit students to practice in enterprises in a timely manner from the policy, and give certain support.

2. At present, most of the teachers in undergraduate colleges and universities are from colleges and universities, and few of them are from enterprises. Although their theoretical knowledge level is high and their laboratory hands-on practice ability is strong, they cannot fully understand the actual production and needs of the front-line enterprises because they do not come from the front-line enterprises. In view of this situation, the school can set up practice teacher posts, and employ outstanding employees of enterprises as teachers, who enjoy the same treatment as college teachers. This can not only ensure the effect of students' practice, but also solve the problem of where to practice.

3. Colleges and universities should not only have full-time posts to guide and help graduates to find jobs, but also need to set up full-time practical posts to be responsible for docking with enterprises, and look for enterprises that can practice through multiple channels. For example, contact previous graduates who have been employed to introduce suitable enterprises as practice bases, and give appropriate rewards.

IV. CONCLUSION

This paper discusses the online and offline hybrid teaching mode. First of all, it analyzes the background of online offline hybrid teaching mode, as well as the problems existing in traditional teaching mode and online teaching mode. Then, it puts forward the online offline hybrid teaching mode, analyzes the problems existing in this mode at present, and puts forward solutions. Then, it discusses two hybrid teaching modes: online+offline+practice, online offline online. The former is more suitable for courses such as a large number of programming or emphasizing the close combination of theory and practice. Compared with other online and offline models, the former adds offline guidance of personality considerations, common problems and the review of typical problems, effectively improves the depth of students' understanding of relevant theoretical knowledge points, and improves students' ability to combine theory with practice by expanding tasks through practical operations. The latter is a dynamic demand process, which changes with the needs of society. Colleges and universities need to adapt to social needs, adjust teaching methods in time, and cultivate talents more suitable for social needs.

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