Research on the Three-Dimensional Classroom Mixed Teaching Reform of the Network Open Course

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Abstract

In recent years, the development of online open courses in China, how to effectively ensure the completion rate of online courses, how to use information media resources to improve the quality of personnel training, and how to use information technology to solve the difficulties of teaching and learning are the main problems.Based on the advantages of online learning and teaching difficulties, this paper analyzes the basis of promoting in-depth learning based on three-dimensional learning space Hybrid Teaching from the perspective of learning theory, constructs an online open curriculum design scheme of "self-study on website, mobile learning guide and classroom research", gives the learning process of students and the teaching process of teachers, and explains it with the teaching practice data of "circuit and electrical experiment" course.Effectiveness.It is hoped that this paper can provide reference for the future design of network intelligent teaching and the reform of higher education informatization.

Keywords

Online open course, Electrical practical training, Course assessment.

1. Introduction

General secretary Xi Jinping, Premier Li Keqiang's series of important speeches, and the strategic plan of the Ministry of education's "ten year development plan for education informatization" (2011-2020 years), clearly put forward the educational informatization, the Ministry of education [2015]3 Gao Wen (2015.4), "opinions on strengthening the application and management of online open courses in Colleges and universities". Around the basic task of cultivating talents, following the laws of education and teaching, deepening the reform of higher education and teaching, actively adapting to the individualized development and diversified lifelong learning needs of learners, building online open courses and public service platforms based on national conditions, strengthening the supervision of course construction and public service platform operation, promoting the deep integration of information technology and education and teaching, and promoting high-quality education resources Application and sharing, comprehensively improve the quality of education and teaching.

In the curriculum system of higher vocational education, the professional basic course plays an important role. It directly serves the follow-up professional courses and has the characteristics of basic, instrumental and adaptive. The quality of professional basic course learning directly affects the learning of professional courses and the cultivation of students' professional ability. At present, there are many problems in the teaching of professional basic courses, such as single teaching method, low teaching efficiency, low overall quality of students, low enthusiasm for learning, uneven level of teachers and poor teaching quality. The emergence and development of online courses have enhanced the attraction of teaching, stimulated the enthusiasm and autonomy of learners, expanded the benefits of high-quality education resources, and is promoting the reform of teaching content, methods, models and teaching management systems and mechanisms, bringing new opportunities to higher vocational education. The purpose of this project is to study the online open course teaching reform with "electrical and electronic technology" as the course carrier.

2. Research status

As mentioned above, there are also the following problems in the current course of electrical and electronic technology:

(1) the overall quality of students has declined and the level is uneven. In recent years, the proportion of liberal arts students enrolled in science and engineering majors has increased year by year. These students are weak in physics and mathematics. Some vocational college students are not enterprising in their thoughts, pessimistic and disappointed in their future. They are tired of learning, self abased, rebellious, obedient and lazy in their behavior consciousness, which leads to the increase of difficulty in teaching.

(2) the teaching method is single and the teaching efficiency is low. For example, in the teaching of electrical and electronic technology, teachers do not pay enough attention to students& apos; interests, hobbies, personality differences, etc., mainly based on the traditional curriculum teaching mode, that is, according to the chapters of teaching materials, teachers from the introduction to the last chapter indoctrinated explanation. The final result of this mode is: there are many concepts, theoretical content, abstract content, and students& apos; application knowledge. The lack of practice results in the limited improvement of students& apos; professional key ability, far away from the professional working environment, and "learning is useless". Students are difficult to understand and listen to a set of theories told by teachers, which leads to the weariness of learning and low teaching efficiency.

(3) lack of teachers and poor teaching quality. Taking our school as an example, there are three full-time teachers in the teaching and Research Department of mechanism and automation, and according to the statistics of the number of students in grade 18, there are about 2000 students who need to attend the course, so the teachers are obviously insufficient. Some classes of the course are mainly combined classes, and some of them may need external teachers or other double shouldered teachers, which to some extent affects the teaching quality of the course.

3. Advantages and teaching problems of online learning

With the development of network technology, online learning has gradually become the focus of higher education teaching reform in solving the above problems. The MOOC platform of "school online" in China is growing rapidly, online open courses are emerging, and mobile learning software functions such as "learn through" and "rain classroom" are constantly enriched. According to CNNIC& apos;s 40th statistical report on the development of China& apos;s Internet, as of June 2018, the number of online education users in China was 120 million, with a half year growth rate of 22.4%; the utilization rate of mobile online education users was 16.6%, with a growth rate of 2.5% compared with the end of 2016.Online learning, especially mobile learning, is becoming more and more popular among young students and working social people in the following four obvious advantages.

(1) online learning is convenient in time, place and personality. Learners are free to choose when, where and at what pace to learn in accordance with their own habits. They do not have to listen to the lectures in the prescribed place at the prescribed time.This greatly meets the individual psychological needs of learners.

(2) making the teaching content into micro video will help students improve their learning efficiency. The combination of video and text provides diversified stimulation to the brain; the narration of human image and voice with animation is easier to attract the learners' attention; the micro video of 10-20 minutes completes the explanation of a certain knowledge point or topic, and the retention of students' learning attention is high, which improves the learning efficiency.

(3) the content and progress can be memorized and reused. When you don't understand it, you can go back and study it repeatedly. When you forget it, you can call it out at any time to see it again. This greatly meets the needs of students with different bases, different response speeds and different learning requirements.

(4) it has a wide range of adaptation and conforms to the development trend of lifelong learning. Learners can choose courses of different colleges and universities according to their own wishes, or complete professional education for college students / postgraduates as required, as well as on-the-job skills improvement and knowledge charging, which greatly meet the social needs of knowledge explosion and the educational development needs of the innovation era.

However, with the online open courses going online and the progress of teaching implementation, there are also some problems such as "large number of selected courses, but low completion rate", which are mainly reflected in the following three aspects.

(1) online learning lacks effective constraint and incentive mechanism. The essence of online courses is free and loose.Many learners don't have strong will or long-term ability to complete all the learning, especially in the face of a large number of courses with a large system and a large number of boring knowledge content. In the process of individual learning, learners don& apos;t have a collective learning atmosphere, lack of face-to-face management constraints of teachers, so it& apos;s easy to slack off and give up.

(2) online teaching lacks sufficient interaction. Micro video teaching, such as MOOC, still imparts knowledge by means of indoctrination. It cannot fully carry all the teachers' ideas on classroom teaching, nor can it replace the face-to-face interaction between teachers and students. Students follow the video, lack of face-to-face language dialogue, personalized thinking mobilization, in class inspiration and interaction cannot be achieved, cannot achieve the collision of thinking, "teaching and learning together" deviates from the original intention under the current online teaching platform.Although discussion areas have been set up in some websites, the current technical means are to complete "discussion" in the form of text, pictures or voice messages and "message + reply", and the timeliness is limited; the problems left by some learners often need to be placed for one day or more, and the replies are mostly just words, and the actual interaction is greatly weakened.

(3) online assessment is difficult to realize the real assessment of ability. Interview volume, completion rate of video task points, number of speeches in the discussion area, assignments, small tests and online examinations are the basis for determining the scores of online courses. These are the statistics of learning amount and the evaluation of knowledge mastering effect. The assessment of ability is limited to a few subjective questions.However, restricted by technology, the construction of question bank and the submission of answers by students are all constrained by the expression of charts, formulas and symbols; because of the technical obstacles of identification, the automatic correction of the system is only limited to objective questions, which cannot guarantee the correct correction when it involves charts, formulas and symbols. Therefore, there is a situation that most of the questions are written and most of the objective questions are objective. The assessment of ability, especially the assessment of comprehensive ability, is seriously lacking, and it is more likely to produce untrue assessment results.

In order to solve the above problems, this project will take the online open course of electrical and electronic technology as an example to explore the positive role of three-dimensional classroom Hybrid Teaching in the course information construction.

4. Theoretical analysis of online learning

Under the current technical conditions, the complete distance teaching is not in line with the relevant learning theory and pedagogical laws, and cannot achieve the goal of talent training.Under the technical support of digital media, the three-dimensional classroom hybrid teaching combines the three-dimensional classroom space of "online resource self-study, mobile interactive guidance, classroom face-to-face research" to design the teaching structure, give full play to the resource advantages of online open courses, use the mobile terminal as a flexible teaching aid, and deepen and expand with the help of face-to-face classroom discussion. This kind of hybrid teaching is a kind of teaching mode which is highly integrated with learning theory and modern education technology, and it is applied in the classroom.

4.1 Improvement of cognitive level

According to the psychologist Bloom& apos;s classification of educational goals, human cognitive level consists of six levels: memory understanding application analysis evaluation creation."Listening and seeing" and "speaking and doing" can effectively achieve the memory, understanding and application of specific knowledge, but it is difficult to go further. Analysis, evaluation and creation can better establish the relationship between knowledge, generalize knowledge categories and realize migration, promote the deepening of learning depth and reach the level of ability cultivation, so as to find the most effective method in the face of complex problems.

If the teaching only stays in the supply of micro video and resources, ignoring the effect of interaction, then the learning depth can only stay in the first three levels of cognition. To promote the promotion of cognition, we need to guide students to analyze and identify problems, to find and explore problems, to evaluate and reflect on problems, so that students& apos; application ability can be cultivated. Online courses use micro video and other resources to let learners establish a preliminary knowledge structure. Teachers distribute given tasks through the mobile terminal, so that learners can repeatedly apply and analyze knowledge, and compare them; use classroom time to guide learners face-to-face to conduct thematic discussion and thinking induction, find solutions to problems on the basis of consolidating cognition, and form a comprehensive cognition, and finally In the complex system, it is necessary to carry out logical reasoning and deduction, clarify the relevance of conditions, and formulate the most effective strategy for innovation.

4.2 Change from knowledge to ability

In the network era of rapid development of technology, the updating of knowledge changes with each passing day, especially for young students who have not formed a scientific learning mode, knowledge expansion can easily lead to the fragmentation of knowledge acquired by learners, and there is no choice in application. Therefore, learners& apos; learning behavior needs to change, that is, from knowledge-based to ability-based; the absorbed knowledge is internalized to form a system, and can constantly integrate into new knowledge to establish a comprehensive ability to solve problems.

The content of language description, formula deduction and chart display provided by website micro video and study text is mainly knowledge, which is a general method for general problems. In the ever-changing application environment, it needs the innovation of ability and thinking, the establishment of the relationship between knowledge, and the formation of a comprehensive knowledge and ability system in the process of exploring the origin of methods and the dialectical relationship between conditions and results. In mobile and face-to-face classroom, teachers& apos; problem-based learning guidance and interactive learning are the key links to guide students from knowledge to ability, to face and deal with information problems of knowledge explosion. Especially for science and engineering courses, it is necessary to correct and adjust methods and strategies in real time in the face of technological changes and updates. Therefore, it is more important to lead science and engineering students to change their learning objectives from knowledge intake to application ability and innovation ability.

4.3 Personalized learning and innovation

Playing chess, driving, operating...The development of artificial intelligence has almost replaced all the programmed behaviors of human beings. The innovation of human thinking has an unprecedented sense of urgency. Innovation cannot be separated from individuality in essence. In the face of the reform of innovation education in the information age, personalized learning should be emphasized. Large scale school education develops in the industrial society and provides human resources for generations, which has been highly standardized and unified.The education system with unified standards and the inherent knowledge system are easy to inherit, but the divergent thinking innovation is difficult to achieve. In today& apos;s information age, the talent training mode of one thousand people cannot meet the needs of social development.

Personalized learning promotes innovation. Complex and diverse personalized learning needs are the cradle of innovation. Through the construction of online course resources, combined with the interaction between mobile terminal and classroom to create a debate and discussion learning environment, guide students& apos; personalized learning to promote innovation. Complex and diverse personalized learning needs are the cradle of innovation. Through the construction of online course resources, combined with the interaction between mobile terminal and classroom, to create a learning environment for debate and discussion, and guide students& apos; personalized learning, not only can enhance their interest in learning, but also more importantly, expand their thinking mode, promote the formation of correct questioning and critical mode, and move towards innovation.

5. Online learning teaching design

The course resources, organization forms and structure of online open course website are the basis of course teaching operation, and also directly determine the implementation plan of course teaching. The information-based teaching conditions and tools for 3D classroom hybrid teaching include online open course platform, smart classroom and mobile learning interactive software.

The online course platform provides the resources of course learning, learning detection, learning requirements and learning data records; the online classroom provides face-to-face discussion, display and review of teachers and students& apos; teaching and learning; the mobile learning interaction software provides the distribution channel of teaching instructions, materials and feedback for face-to-face teaching and learning and remote personalized teaching and learning. Therefore, online open courses need to integrate the characteristics of website, mobile terminal and classroom learning, design and layout curriculum resources and tasks to adapt to the implementation of hybrid teaching operation.

The website provides course objectives, requirements, course selection guidance, videos, question banks and other resources for self-study and assessment. Video is the main content of students& apos; self-study. It gives the main line of course knowledge according to the unit and sub module, which requires less and more precise. Other teaching resources refer to Chinese and English reference resources other than videos and question banks. They can be courseware, documents, supplementary videos, etc. for students to watch and study freely.

The design of interactive task package includes cloud disk theme task and mobile end classroom activity. The forms include question and answer, selection, judgment, deduction, drawing, example, etc. It mainly aims at video knowledge inspection, confusion, Video Association, application of main theories and methods, extension of methods, etc. The theme task packages placed on the cloud disk are classified according to the hierarchical teaching objectives, and each end of the interaction area is distributed in advance or on site. The classroom activities placed on the mobile terminal are mainly scattered and typical cases, typical problems left over in the classroom, including learning progress inspection and real-time data of classroom performance, etc., which are flexible for selection in class, and also for random distribution of online interaction.

The basis of 3D classroom hybrid teaching is online open course website. On the premise of students& apos; self-study of website knowledge, through face-to-face discussion of large classroom and mobile virtual small classroom, the mobile interaction is a flexible and important link. This link can distribute tasks before class, improve class efficiency, and distribute field tasks or supplement and improve any tasks in class. It can also record and publicize the results of the class discussion. After class, it can play back the results of the discussion and continue and guide the new round of learning. The completion time of each task package should be within 30 minutes, which can be distributed in advance or on site through the mobile terminal interaction area during face-to-face classroom discussion. The classroom activities placed on the mobile terminal are mainly scattered and typical cases, typical problems left over in the classroom, including learning progress inspection and real-time data of classroom performance, etc., which are flexible for selection in class, and also for random distribution of online interaction.

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① online video provides knowledge bus, which can be learned repeatedly; ② learning time, time and rumination are arranged independently; ③ data is recorded in the learning process, and feedback can be traced; ④ online tasks and tests can be called back; ⑤ task distribution can promote students to collect detailed knowledge by themselves; ⑥ learning confusion and report summary are open; ⑦ teachers and students have multiple rounds of discussion and debate, gradually forming knowledge structure and Ability; ⑧ the teacher reviews and discusses the report and unit thought map, and chooses to issue follow-up tasks (such as examinations); ⑨ guide the direction of extended learning; ⑩ the students record their scores and make them public in real time in the course website, mobile interaction area, classroom tasks, speeches and reports.

6. Summary

The key of the three-dimensional classroom hybrid teaching operation plan is to change the teaching concept, to learn to teach, to change teaching as a guide. With students as the main body, under the support of online open course website resources, the real-time interaction of "face-to-face discussion large class + mobile virtual small class" is constructed to promote students to gradually carry out in-depth learning in the multi cycle of "acquiring knowledge, causing problems, researching and solving".

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