Exploration and Research on Online Open Course Construction of Software Engineering Professional Practice Course

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Keywords: Application-oriented undergraduate degree, Practical teaching, Online open courses applied

Abstract: this paper explores the construction of online open courses for software engineering specialty practice courses. Keep applied undergraduate "take employment as the guide, ability as the standard features of teaching modes, combining with the social demand for software talents and future development direction, and actively explore suitable for various kinds of professional talents in software engineering online open courses, guided by the demands of industrial development, with academic frontiers and technical updates of the latest development to promote online course content. It integrates all kinds of high-quality teaching resources with informationized hand sections, creates an online and offline teaching mode of "online learning evaluation + offline question-answering", promotes the integration of various online open courses, and promotes the innovation of teaching mode.

1. Introduction

MOOC (Massire Open Online Course) is a new mode of Online education, which originated in the United States.[1] MOOCs have also received a lot of attention in China.At present, most of the MOOC courses offered on iCourse.com in China are offered by key universities such as Project 985 and Project 211.This allows learners to enjoy a stream of domestic and foreign educational resources without leaving home.However, while we are happy, we also need to reflect that the quality courses offered by research universities may not be suitable for application-oriented students in terms of content and methods.

In April 2015, the Ministry of Education issued the Management Opinions on the Construction and Application of Open Online Courses in Colleges and Universities, hoping that colleges and universities should have a deep understanding of the impact of the rapid development of information technology on education and teaching, and take the construction and use of open online courses as an important measure to promote education and teaching reform.[2] Hubei Provincial Department of Education has decided to implement the provincial quality online open courses project construction for ordinary undergraduate universities in Hubei Province since 2016. The online open course construction of practical courses for application-oriented undergraduates is still in its initial stage, with lack of resources, slow speed of promotion and few completed courses. Especially, the online open course construction of some professional courses with strong operability is seriously inadequate. This paper discusses how to build an online open course with a high matching degree with the industrial demand, based on the requirement of the practice course of soft parts engineering specialty.

2. Construction Principle

2.1 Based on the Talent Training of Application-Oriented Universities, Highlight the Characteristics of Application-Oriented Education

According to the demand of social economy and science and technology development for software talents and the training goal of high quality applied talents of the school, and following the

principle of "solid foundation, strong practice and emphasis on ability", the selection standard, construction standard and guarantee standard of practical teaching online open course are made.In view of the practical curriculum construction of software specialty, we should not only base ourselves on making high-quality products, but also meet the requirements of application-oriented talents training and reflect the characteristics of application-oriented talents training.Modern technicians are faced with many engineering application problems, especially in the field of software development. Students are required not only to have professional software development ability, but also to be equipped with the ability to solve specific engineering problems.Therefore, in the practical curriculum system, it is necessary to pay attention to the combination of engineering technology education and humanistic quality education, and strengthen the students' ability of communication and cooperation.

2.2 Build the Software Engineering Professional Practice Curriculum System to Meet the New Needs of Social Development

Establish the "new idea" of comprehensive and full-cycle engineering education;Adjust the practical curriculum structure of software engineering major to adapt to the new talent needs and future development direction, actively explore comprehensive courses and multi-perspective courses to solve problems, and promote the update of teaching content with the latest development of discipline frontier, industry and technology;Guided by the needs of industrial development, carry out research and practice on the reform of systems and mechanisms and personnel training mode of deepening the integration of industry and education and school-enterprise cooperation;Constructing software engineering practice curriculum system to meet the new needs of social development;Promote the update of teaching quality evaluation system in practice.

In the last few decades, in order to adapt to the industrial development and serve the local economy, the software engineering major has carried out the integration of industry and education, trained the "new engineering" talents with innovative and entrepreneurial consciousness, systematic thinking and cross-border integration ability, who can actively adapt to and lead the new economy, thus gaining competitive advantages.

2.3 Scientifically Set Online and Offline Courses and Systematically Design Practical Open Online Courses.

The cultivation of application-oriented undergraduate software talents focuses on cultivating practical and application-oriented talents, which requires the master of software design and development and other application-oriented technologies.Therefore, the characteristics of undergraduate software courses should be placed on the industrial application, highlighting the practical operation of the course schedule, so as to cultivate talents with stronger practical application ability.

Teaching team based on application requirements tease out key points of the proposed course, and will be open for online courses related quality pieces of suitable organic integration of resources, implementation of network resources sharing, pay attention to the reasonable collocation of online and offline course, the course construction can meet the requirements of practical talents and the cultivation of applied talents.With the help of the developed information network, students can easily and quickly carry out the open course preparation, independent learning and self-testing, stimulate students' interest in learning.

3. The Construction of the Content

3.1 Explore the Online Open Course Mode of Practical Courses

The specialized courses of software engineering focus on cultivating students' practical and hands-on ability, running real engineering projects through the course practice, allowing students to experience the full cycle of software projects from scratch, establish the new concept of comprehensive and full-cycle engineering, and better integrate into the enterprise industry after

graduation.Practical courses are the application and sublimation of the knowledge learned in theoretical courses.The establishment of practical courses online open courses is very consistent with the program of applied talents training.Create an online and offline teaching model of "online learning assessment + offline question-answering", support the combination of online learning and classroom teaching, flipped classroom and other mixed teaching and learning, promote the integration of multiple open online courses, and promote the innovation of teaching models.

Firstly, it analyzes the existing offline teaching resources, combines the existing knowledge and skills of students, and uses the online MOOC platform to build a teaching platform suitable for carrying out practical courses.Adopting the pass-through mode of teaching, focusing on solving practical operation questions in practical courses, improving the interest of online class.

Secondly, MOOCs adopt the mode of combined online and offline teaching.In offline class, teachers assign learning tasks in advance, specify learning objectives, answer students' personalized questions, guide students to complete practical difficulties encountered in online class, and conduct face-to-face discussion and communication with fellow students.The online class completes the learning task, guides the teaching and learning, through the setting of the mode of passing through, consolifies the theoretical knowledge learned from the simple to the deep, and applies it to the practical operation.Through the combination of online and offline teaching methods, improve the operability and practicability of practical courses.

3.2 Make Full Use of Virtual Simulation Experiment Platform

The drawback of MOOCs is the lack of hands-on sessions, and there is no way to substitute video teaching for hands-on practice.Online open courses of practical courses can make full use of virtual simulation experimental platform of network resources, combining with the characteristics of the course, teachers can make and design experiments on the simulation platform[8]. Virtual simulation experimental platform is interactive, open and free from time and space restrictions, and students can use it repeatedly.By operating computers or experimental equipment, students can simulate the whole process of engineering development and design and experience the real development scene.Compared with the practical courses in the laboratory, the virtual imitation experiment platform allows students to enter the virtual laboratory for operation at any time according to their own needs, and the operation results will be published on the network platform for real-time comments by teachers.It not only avoids long-distance travel, but also constructs a real working scene for students, so that students can quickly integrate into the engineering practice environment and improve learning efficiency.

The school has been committed to school-enterprise cooperation, training double-qualified teachers.Through the virtual imitation experiment platform, we will deepen the cooperation between schools and enterprises, invite enterprise engineers as professional tutors to improve the online virtual simulation practice course content, and realize the in-depth integration of practical courses and local industries.On the other hand, teachers work together with enterprise engineers on the virtual simulation experimental platform to learn knowledge that cannot be learned from theory. Meanwhile, they participate in the construction of practical curriculum content, which can make practical content more suitable for theoretical teaching and make practice and theory fully fit.

3.3 We Will Supervise the Quality of Courses

Online open course education promotes the innovation of teaching mode and increases the spiritual activity of teaching.Through online guided teaching instead of traditional theoretical indoctrination teaching, teachers can focus more on personalized cultivation of students and solve difficult problems in practical operation.Students can learn independently through the learning platform, and can also carry out targeted learning according to their own ability to master knowledge, so they have stronger autonomy.However, we need to do a good job in education supervision of. online courses, to achieve high quality online open courses, and ensure the quality of learning[9] .Strengthen the control of the learning process of practical open courses.Online learning platforms provide the relevant data of students' online learning information, including the learning time and learning progress, exercises, the correct job completion of the learning process data, but

each of the learning theory knowledge to master degree, in the practice of open courses cannot use unified standards, to establish diversified assessment method.For example: "usual homework + online learning + course test + online interaction + course examination" combined with the end of the course assessment method, to avoid the course score determined by a final exam "a one-off deal".

The practical curriculum of software engineering is project-oriented, through the process of the project to consolidate, master knowledge, flexible application of knowledge to solve practical problems, so as to realize the transformation process from knowledge to ability.The degree of completion of project execution plan is an important index to evaluate students' learning.The degree of completion of the project execution plan refers to that students select a project from the project library of the virtual imitation real inspection platform to complete, formulate an execution plan, which is measured in "days" and approved by the instructor before entering the project development stage.During the whole development process of the project, students need to fill in the schedule, upload design documents, project source code and other stage tasks in time.

Finally, the instructor gives the final evaluation result according to the actual functional module completion ratio of students.

4. Conclusion

The hybrid online open course construction of practical courses integrates the practical operation of online virtual simulation experimental platform with the knowledge learning of offline teacher-guided learning to answer questions and solve doubts, improves the teaching resources, and solves the problem that offline practical operation cannot be integrated with real item training.

Software professional practice courses online open courses construction from software engineer position requirements and professional ability of applied undergraduate college orientation analysis, combining with the characteristics of applied undergraduate college students learning, create a "online learning evaluation under + line unriddling for" the teaching mode of combining tilting of classroom teaching, to realize the characteristics of the "learning with teaching".

Based on the above premise, the organic integration of online and offline teaching ideas is conducive to the construction of practical courses for application-oriented undergraduate software engineering majors and the cultivation of practical software application talents in line with the market demand.

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