

Research on Teaching Reform Practice of Computer Network Technology in Universities in the Era of Big Data

Hai-bing zhang¹, Pei-pei Li^{2,*}

¹Hunan Institute of Traffic Engineering, Heng Yang, Hunan, 421009, China

²Hunan Institute of Traffic Engineering, Heng Yang, Hunan, 421009, China

*Corresponding Author

Keywords: Big data, The computer, Course, The teaching reform

Abstract: The teaching of computer network technology focuses on cultivating the applied skills needed by the society, but the difference between higher education and computer technology in knowledge update and iteration makes it difficult for the students majoring in computer network technology to meet the social needs. Big data, with its richness and openness of information resources, brings both opportunities and challenges to traditional education. Combining computer network technology education with big data and making full use of the rich educational resources and channels in the network can effectively change the disadvantages of traditional computer network technology education and cultivate professional talents more in line with the needs of the society. Therefore, this paper analyzes the current teaching situation of computer network technology courses, and puts forward the teaching strategies of computer network technology through the online and offline hybrid teaching mode, in order to provide reference for promoting the reform of computer network technology courses.

1. Introduction

The rapid development of information technology has promoted the advent of the era of big data, which has had a profound impact on the ecology of all fields of society. In the field of education, with the help of the rich educational resources in the network, people can acquire a large amount of professional knowledge through online learning, which brings a certain challenge to higher education. In the environment of big data, computer network technology courses must make full use of big data to reconstruct the classroom ecology, rely on the combination of online education and offline education brought by the network, and establish a classroom teaching mode that focuses on cultivating students' professional knowledge and practical skills. By giving full play to the educational value of big data, it can effectively solve a variety of problems existing in the traditional education mode, and improve the teaching quality of computer network technology courses, so as to cultivate more professional and skilled talents that meet the needs of the society.

2. Present Situation of Computer Network Technology Course Teaching

2.1 The Teaching Model Lacks Innovation

Computer network technology course involves more content, wide knowledge coverage, and involves a number of professional disciplines theory and practice education content. However, influenced by a variety of subjective or objective factors, some colleges and universities have the problem of imperfect teaching system. The teaching content of professional course teachers shows the characteristics of arbitrariness, and lacks the joint force with computer network technology courses, which leads to the actual effect of their education does not meet the expected requirements. From the perspective of social demand, the social demand for computer network technology professionals lies in the ability of programming, operation and maintenance, website design and other aspects. These abilities require strong practicality. However, most of the practical ability of the students majoring in computer network technology can not meet the requirements of

enterprises, and they need further training from enterprises, which affects the core competitiveness of students' employment. Investigate its reason, on the one hand, is part of the college of software and hardware facilities, it is difficult to meet the requirements of students practice of computer network technology, on the other hand is that teacher's own professional technical ability doesn't pass, knowledge update iteration depends on the book knowledge, can't keep up with the hardware and software of the iteration, it is difficult to undertake to the student the cultivation of thinking ability and practical ability, It affects the improvement of students' professional ability.

2.2 Lack of a Good Learning Atmosphere

In order to cultivate applied talents with excellent professional ability, colleges and universities usually take practical education as the basic education mode in the course teaching of computer network technology, which is inclined to practical technology. Although it can effectively improve students' professional practical ability, there is a phenomenon of insufficient proportion of theoretical education. Solid basic theoretical knowledge is the key to the completion of professional courses, but in computer network technology courses, theoretical education generally occupies a short period of time, there is no systematic theoretical education to help students build the framework of knowledge structure, it is difficult to play a supporting role in practice theory. At the same time, the lack of theoretical education has affected the formation of the learning atmosphere of computer network technology major in colleges and universities. The learning atmosphere will have a subtle influence on the behavior pattern and ideology of students. A good learning atmosphere can often make students more self-disciplined to devote themselves to learning. But in the current education mode, teachers, which is mainly composed of practice courses in order to complete the teaching mission, usually take hidebound education mode, the lack of independent classroom activities lead to the students' critical thinking, creative thinking, by the teacher to explain knowledge by the students again verifies the practice of teaching methods based on workflow often does not apply to the computer network technology education. In addition, the lack of attracting new teaching methods leads to students being in a fixed teaching mode for a long time. The original boring and obscure computer network technology course content is even more boring. Most students find it difficult to arouse their interest in learning, let alone to build a good learning atmosphere, which affects the overall learning effect of students.

2.3 Classroom Education Has Become Less Competitive

In the highly developed big data environment of information technology, the channels to acquire knowledge are diversified. Knowledge learning is more and more not limited to classroom learning, but can be acquired through the network, which affects the authoritative position of classroom education. The essential goal of computer network technology course is to help students master the professional computer network technology and serve for career development. But due to the limitation of the education itself, the knowledge update iteration cycle is long, and the computer software and hardware technology of iterations significantly shorter, and teachers need to take the larger teaching and scientific research content, its limitations make it difficult to update their knowledge structure, which makes the computer network technology education is hard to keep up with the time development trend. In this context, the expansion of knowledge acquisition channels makes it possible for students, especially computer enthusiasts, to acquire professional knowledge through the network and master the cutting-edge development of software, hardware and related technologies, which reduces the authority of universities in the education level. This kind of problem has a negative effect on the teaching of computer network technology, which makes the classroom teaching more and more unable to meet the new requirements under the development of technology, which traps people in a vicious circle.

3. Computer Network Technology Curriculum Reform under the Environment of Big Data

The network education mode based on the big data environment, through the full use of cloud computing, Internet and other technologies, can provide solutions to the problems existing in the

current computer network technology courses. Factors to the professional characteristics of computer network technology should be collaborative project teaching as the core, through using in practical work from bidding to the whole process of after-sales service, computer network technology, the teaching can be divided into three stages of teaching: first, in the development stages of teaching resources, and need to be done by teachers' development of curriculum resources, Make teaching resources and build a network learning knowledge platform to lay a foundation for the subsequent teaching work; Secondly, in the teaching implementation stage, teachers should design learning guides and provide online tracking and guidance to students with the help of online teaching platform, while students explore and study independently through online education resources, and constantly solve difficult problems while completing synchronous exercises, so as to realize the knowledge impart process. Then, teachers should give personalized guidance for students' difficult problems, and control the course progress. Students can understand, improve and transfer knowledge through teacher guidance, and realize the internalization of knowledge. Finally, in the stage of teaching evaluation and urgent conclusion, teachers need to evaluate students' performance according to the test results, grasp students' opinions on the course through questionnaire and conduct statistical analysis, while students need to complete homework, tests and final exams in accordance with the regulations to provide data support for the evaluation of teaching effect. Then, teachers should reflect on the teaching evaluation results, optimize the teaching plan and teaching resources, and students also need to reflect after class, find out their own shortcomings in learning, in order to complete the refinement of computer network technology education. The specific educational model is as follows:

3.1 Development of Teaching Resources

The teaching of computer network technology under the environment of big data requires the development of teaching resources before class and the construction of a support system including teaching materials and teaching websites. Among them, the core of the development of teaching resources lies in the video teaching courseware, the quality of the video courseware will have a direct impact on the internalization of students' knowledge. Video courseware production needs teachers combining collaborative project teaching method, the teaching content is decomposed into several projects and for each project design the teaching goal, content, and according to the difficulty of teaching contents to make several teaching video, each about 5-10 points in the length of the video, make sure students can highly focus on the content of the video in a short time. In addition, online education platforms with complete functions should be selected to provide channel support for uploading video courseware, arranging homework and tests, etc.

3.2 Teaching Implementation Process

First of all, in the pre-class preview stage, teachers need to formulate and release the teaching plans for the subsequent stages, so that students can independently plan their learning plans according to the learning tasks stipulated in the teaching plans. Teachers need to prepare teaching materials including video, PPT, audio and other forms for students, and let students watch the video courseware with questions through the design of questions. After watching the video courseware, students consolidate and expand knowledge through exercises after class, so as to complete the transfer of knowledge. During the learning process, students can seek solutions independently by consulting relevant materials for questions. For problems that cannot be solved by themselves, they can communicate with teachers in the question section of the class, so as to ensure the normal development of learning process.

Secondly, in the class learning stage, the teaching process needs to be divided into theoretical teaching and practical teaching two levels. From the perspective of theoretical teaching, students should find out the difficult parts of theoretical knowledge after watching the teaching videos and practicing, and then ask them to seek solutions through group discussion and referring to relevant materials. For problems that cannot be solved, if the problems belong to common problems, they will be explained in class. If the problems belong to individual problems, one-to-one tutoring will be given after class to avoid taking up class time. From the perspective of practical teaching,

teachers should conduct project simulation according to the teaching content and combined with the actual engineering projects, organize several small project implementation groups, and each group should choose its own leader to undertake the task allocation, progress management, quality supervision and other work, and jointly complete the work content through the cooperation within the group. And teachers need to give appropriate guidance to help students expand the breadth and depth of thinking. After the completion of the project, each team will appoint a spokesman to report and demonstrate the project results. Through the simulation of the actual working environment, students' working ability can be cultivated and knowledge internalization can be completed. In this process, students can effectively improve the level of computer network technology knowledge through the exploration of the problem, the consolidation of theoretical knowledge training, learning group internal discussion and thinking mode innovation. At the same time, project-driven teaching method can realize the consolidation of theoretical knowledge through practice, and complete the understanding, application and transfer of knowledge.

Finally, in the after-class evaluation stage, students need to check and make up the gaps according to the established teaching plan. First of all, we should re-examine the mistakes in project teaching, analyze the deficiencies in the knowledge structure, and reflect on the comments given by teachers. Secondly, the study results should be tested regularly through homework, regular tests, midterm and final tests to ensure students' learning enthusiasm. Finally, group cooperative learning should be carried out. When students are faced with difficult problems, it is priority to discuss with group members to find solutions, so as to improve the overall learning level of members. According to the completion of the course of computer network technology, teachers should focus on cultivating students' independent learning ability, explain the key points and difficulties of teaching in the stage uniformly, provide students with more scientific teaching methods, promote high-quality network teaching resources, and provide methods and conditional support for subsequent students' independent learning.

4. Conclusion

Restricted by various subjective or objective factors, the current teaching model of computer network technology is relatively rigid, knowledge structure and the hardware and software update iteration cycle longer than the industry level, and focus on practice education despise theory education problems lead to the lack of good learning environment and traditional classroom teaching mode under the influence of big data is the lack of competitive power and authority. And abundant education resources and diversification in the big data channels of education gave its outstanding education value, through the use of network teaching platform, video teaching courseware, such as form, can be achieved offline to online hybrid transformation of education, education to change the disadvantages of traditional education mode, cultivate conforms to the social needs of computer network technology professionals.

References

- [1] Yu Zheng. Research and Practice of Blend Teaching Based on UMO Interactive Learning Platform -- A Case Study of Computer Network Technology Course in Secondary Vocational Schools [DL. Shanghai: East China Normal University, 2019
- [2] ZHU Li-Jin. Curriculum Reform and Research of Modular Practice Teaching of Computer Network Technology Curriculum [JL. Computer Knowledge and Technology, 2019,15 (21):36-37.
- [3] Li Hong, Jin Huazhong. Teaching Reform and Practice of Computer Network Technology Curriculum Group under the Environment of Internet of Things [JL. Computer Education, 2017(6):109-113.