Design and Application of Computer Network Experiment Teaching Content Based on Huawei Technology

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Abstract: The experimental teaching method of computer network course based on Huawei technology is discussed. According to the content and characteristics of the route, the experimental guidance of the route is explored from the viewpoint of experimental group plan, experimental content process design and information experimental guidance. It is aimed at improving the quality of experimental education and training students' practical skills more effectively. Experimental education is an essential part of computer network course and an important method to improve students' ability to analyze and solve problems. Aiming at the problem of experimental education, we try to expand the knowledge, improve the students' attention and improve the effect of education by means of the conditions, guiding purpose, teaching content, teaching process, teaching evaluation, analysis and design of computer network experimental course.

1. Introduction

Computer network is a very wide and practical technology. At the same time, with the rapid development of computer technology and communication technology, knowledge and technology related to the content of computer network knowledge have been rapidly updated and developed. Education related to computer networks is based on the knowledge of computer technology and communication technology. Moreover, the experiment can be completed in a specific experimental environment. Moreover, it mainly reflects on the introduction of knowledge point teachers. The experimental device and device can not be completed. Computer network is a complex system. The end-to-end data transmission process is the result of the interaction between various protocols and various network technologies. Therefore, in the actual network environment, only a variety of protocols and network workflow are discussed. Technical operation mechanism and interaction between them can provide complete and systematic network knowledge. From the perspective of psychology and education, the knowledge of computer network is the knowledge of professional skills. For students, there is almost no understanding of relevant knowledge before learning computer network courses, not necessarily the appropriate place, but at the social level. Because of many problems, he studied the experimental teaching process of computer network [1].

2. Current Situation of Computer Network Course Experiment Teaching

Now universities and universities generally offer computer network courses. Students generally learn from the network foundation such as communication media, then learn network management, and finally complete network security. In this paper, the computer network experiments of related specialties are studied, and it is found that there are still some unsatisfactory aspects in the experimental teaching of computer network.

2.1. Lab hardware facilities are inadequate.

Now many schools, due to financial reasons, can not meet all the requirements of the experimental content. Many university network laboratories have limited machines, which can not satisfy all students' experiments at the same time. This situation is not helpful to students' practical ability. It greatly affects the quality of experimental teaching.

2.2. The experimental teaching form is single.

Fixed experimental methods are widely used in experimental classes. The advantage of this configuration is that teachers can complete experimental courses, and students' experimental design and preparation are inadequate. Students do not feel the experiment, do not know the basic operating principles of Abstract.networks, operating principles and device operation [2]; indeed, there is not enough diversification of data. The thinking and discussion of the experiment are not in-depth, and the practical application can not be fully linked with it.

2.3. The content of experiment teaching is not comprehensive and outdated, which is divorced from the practical application.

The content of computer network experiment is insufficient. Corresponding to the theoretical teaching content of network course, the content of network experiment course is not comprehensive enough and its form is monotonous. Most of the experimental items are validation experiments, comprehensive design and design. Experiments are scarce, and experimental content is far from new knowledge and technology that are in real life and out of real employment environment.

2.4. Insufficient experimental class hours.

Computer network is a basic course for computer related majors. The distribution of experimental classes can not generally meet the requirements of students. At the same time, due to the diversity and diversity of network equipment and models [3], students can not fully grasp the use of network equipment only in a number of experimental courses, so the possibility of failure of the experiment is also high. The time limit in class does not allow students to repeat it many times. In the second attempt, it must allow students to extend their learning beyond class.

2.5. The experimental organization is single.

The development of the experimental route is generally limited to the classroom of the research room. Teachers explain the experiment, provide students' hand operation, teachers' patrol and help, and finally submit the test report. In this course, students can not improve the sense of innovation, but the actual ability has not been effectively improved. Because teachers have certain energy needs, we can not meet the actual needs of students. When students encounter problems, they are not conducive to solving problems, solving problems and solving problems.

Therefore, in order to improve the experimental teaching effect of computer network and enable students to learn knowledge and skills [4], the key is to make breakthroughs in computer network experiment class.

3. Experimental Contents and Characteristics

The experiment is mainly based on Huawei cloud computing big data laboratory software and hardware equipment support, training students based on Huawei Fusion Computer cloud platform to build and deploy Fusion Sight big data platform, and management and maintenance E platform. Details include: creating SUSE Linux virtual machine, planning and preparing Fusioning Sight installation, FusionSight installation, Dual System Manager installation and cluster installation. These contents must be completed in strict accordance with the strict process, and the order can not be reversed. Through the cultivation of these practical abilities, students will strengthen the thinking and thinking of using cloud computing to process big data, lay a good foundation for further mastering the technology of big data analysis and processing, thus helping students form a complete knowledge system. Based on theoretical knowledge.

Because the theoretical content and experimental content of the course are relatively centralized, and the order is very clear. Generally speaking, after fully explaining the theoretical content, we should concentrate on the experimental content.

4. Design and Research of Experimental Course on Computer Network Course

The teaching design of computer network experiment course can be roughly divided into three stages: analysis, design and evaluation. Firstly, what teachers should learn, what students should learn, and the analysis of learning background determine the purpose of network experiment teaching and the content of network experiment teaching method guidance [5]. Then, comb the content of network experiment teaching and design the process of network experiment teaching around how to teach, and finally solve the problem and how to learn well. What is the problem to carry out the evaluation design of network experiment teaching?

4.1. Analysis of the situation of computer network course experiment teaching

In the preparation stage of experimental teaching design of computer network course, the basic factors that learners should consider are analyzed by systematic method, and the starting point, end point and conditions of network experiment course are announced.

4.2. Analysis of objective education of computer network course

The goal of mastering experimental knowledge and skills is the most basic requirement for students to learn computer network experiment course. This is the material for students to learn technology, exercise the abilities related to experiments and develop their perceptual attitudes. The computer network experiment course aims at the development of students' knowledge and skills, focusing on the research of network concept, knowledge construction, experimental methods and skills, and the cultivation of problem solving ability. That can be comprehensively and profoundly understood and learned. You can analyze, design and solve these problems. In the process of learning, students use online resources to communicate effectively and learn together, so as to improve students' good information awareness and information literacy [6].

Serial number	Experimental module	Experiment name
1	Network system integration experiment	VLAN division configuration of a single switch
2		VLAN configuration between multiple switches
3		Basic configuration and application of STP
4		Inter-VLAN communication using Layer 3 switches
5		Basic configuration of the router
6		Configuration and management of static routes
7		RIP dynamic routing configuration management
8		Configuration and management of OSPF single-area city and multi-area routing
9		Network Address Translation NAT Configuration and Management
10	Web server experiment	DNS server configuration and management
11		Www server configuration and management
12		FTP server configuration and management
13		DHCP server configuration and management
14		Email server configuration and management
15	Network protocol experiment	Composition of Ethernet data frames
16		IP address classification and packet composition
17		Address Resolution Protocol ARP
18		Internet Control Message Protocol ICMP
19		Simple Network Management Protocol SNMP and Network Management
20		User Datagram Protocol UDP
21		Transmission Control Protocol TCP
22	Network security experiment	ARP address spoofing
23		ICMP redirect
24		TCP and UDP port scanning
25		Route spoofing
26		Conflict and network broadcast storm
27		Routing loopback and network loop

Fig.1. Experimental content of computer network course

4.3. The cocoon of the content of the experimental teaching material of computer network course

As the guidance of computer network experiment teaching materials, it is necessary to sum up knowledge, skills, thinking and action in order to achieve the teaching goal of computer network experiment. The experiment content of the computational network course is complex, that is, the hardware environment of the network is the basis of all experiments in the computer network experimental diagram. Therefore, the task of network experiment can be accomplished, and the experiment of protocol type can be carried out smoothly. The experiment in network environment is based on the specific network operating system. Only after the experiment of the installation and setup of the corresponding network operating system is completed, can other experiments in the network environment proceed smoothly. It is divided into four kinds: network experiment, network server experiment, network protocol experiment and network security experiment. Figure 1 shows the specific experimental content [7].

4.4. Design of experimental teaching of computer network course

The educational process of network experiment is a special cognitive process in which teachers actively organize and guide students' physical and spiritual development through conscious activities. In the process of experiment, the purpose and plan, as well as students' subjectivity and cognitive activities, promote students physical and mental development. According to the characteristics of computer network course experiment, the teaching activities of computer network course experiment are divided into the following steps. First, create problem situations. Second, analyze the experimental tasks and find problems. Third, make plans and design plans. Fourth, the experience of experiment and exchange. Fifth, summary and evaluation [8].

4.5. Design of experimental teaching evaluation of computer network course

Teaching evaluation is an important part of educational design. It acts on all stages of educational activities to determine the value of students'learning process and results. In the experiment teaching of computer network course, teacher evaluation, group evaluation and self-evaluation [9].

5. Conclusion

With the wide application of computer network and the development of related technology, the demand for talents at all levels of computer network is very urgent. In order to adapt to social development, students must practice solid basic skills in their school age. Computer network is a comprehensive and practical network route. The research of experimental teaching has improved the quality of experimental guidance, fully mobilized the enthusiasm and enthusiasm of students, and improved their analytical and problem-solving abilities and abilities. Students can improve their ability of pheromone through active counseling and learning, and can play the role of experimental guidance.

The teaching practice of "Computer Network" and other related courses is very complicated, and there are few related materials. This paper combines the software and hardware equipment of the big data laboratory in Huawei I classical computing, the demand for information education and the characteristics of students to design the course. The experimental instruction procedure. The designed experiment follows the structure and working principle of Huawei technology, and understands the detailed sequence of cluster design and installation platform. In the long run, we need to do more effective and extensive information-based experimental methods to stimulate students'interest in learning. Moreover, in order to make the course more practical, students can master the practical skills of big data technology more effectively.

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