

Application and Strategy Analysis of Virtual Technology in the Teaching of Computer Network Security in Universities

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Abstract: With the rapid development of network information technology, people's production and life are inseparable from the Internet. Computer network security is highly valued, and computer network security courses are offered in colleges and universities. The application of virtual technology has effectively improved the quality and level of computer network security teaching, but there are also many problems to be solved urgently. This article focuses on the application of virtual technology in computer network security teaching in colleges and universities.

Keywords: Colleges and Universities; Computer Network Security Teaching; Virtual Technology; Application; Countermeasure Analysis

With the advent of the "Internet+" era, multimedia technology has been popularized in college classroom teaching. Most teachers use PPT courseware to replace the traditional "Blackboard" teaching with remarkable results. The "computer network security" course is unique and requires specific network and specific network preventive countermeasures to support. Teaching lacking actual case support is ineffective. However, colleges and universities do not have enough venues and equipment to guarantee. A computer is needed to demonstrate to students, allowing students to master knowledge in the real situation created. Next, I will talk about some thoughts on the application of virtual technology in the teaching of computer network security in colleges.

1. The current situation of computer network security teaching in colleges and universities

At this stage, there is a large gap of computer network security technicians in social development, and in higher education, the training of such talents is still in its infancy and cannot meet the actual needs of social development^[1]. Based on this, colleges and universities should attach great importance to it and offer cyber security education courses. At present, Trojan horse viruses are part of network security education. Therefore, systems and files infected with Trojan horse viruses are required during teaching, but this will increase the difficulty of computer operation and maintenance. If you do not occupy the computer room of colleges and universities, you need to computer network security teaching builds special classrooms and well-equipped software and hardware equipment facilities, but this requires sufficient financial support, and most colleges and universities do not set up this fund specifically, which leads to the need for improvement in funding and faculty. To a large extent, it has affected the quality and level of computer network security teaching.

2. The main content of computer network security courses in colleges and universities

2.1 Computer network security analysis

As we all know, the long-term development of computers requires the guarantee and support of computer network security,

and network security has received extensive attention from all walks of life. Computer network technology aims to control the information collection process, comprehensively and effectively protect the collected information in a specific network atmosphere, and prevent information loss and loss^[2]. Computer network security is divided into two types, namely physical security and logical security. Among them, physical security is to protect computer equipment from damage or destruction; logical security is to effectively improve the confidentiality and integrity of collected information.

2.2 Safe use of computer networks

With the development of society and the progress of science and technology, the level of computer network security technology in people's daily life, work and study has gradually improved, and it has played an irreplaceable role in the development of all walks of life. The demand for complete network technicians is increasing day by day^[3]. Based on this, in order to promote the healthy and sustainable development of the society and economy, various universities have opened computer network security courses to meet the actual needs of the society and enterprise development for senior technical personnel. However, the computer network security teaching curriculum has a very high level of setting, and it is necessary for professional teachers to gradually research the harmful content of computers in actual teaching.

3. The specific application of virtual technology in the teaching of computer network security in colleges and universities

3.1 Configure a reasonable number of virtual machines based on actual conditions

Under the new situation, when college teachers use virtual technology to carry out computer network security teaching, they should configure a reasonable number of virtual machines based on the actual situation of colleges and students to avoid problems such as excessive occupation of hardware resources when using virtual technology to ensure virtual The quality and level of application of technology in teaching. Generally speaking, when carrying out computer network practical teaching, teachers can create two virtual machines to cooperate with teaching and complete teaching tasks. If blindly responding to the call and ignoring the actual situation, purchasing excessive virtual machines will seriously affect the speed of virtual machine system utilization. And then have a greater negative impact on college computer network security teaching^[4]. Secondly, teachers should base themselves on the actual situation of the host system and program software in the computer room of the university, install relevant systems and software in the configured virtual machine, and then connect the virtual machine and the teaching network through network bridging. In this way, the virtual machine It can simulate or even restore the computer network environment to a large extent, creating a real and effective computer network practice teaching situation for college students.

3.2 Carry out teaching activities according to specific content

When using virtual technology in computer network security teaching in colleges and universities, the teaching mode should be optimized based on the actual content of the course to improve the quality and level of teaching. For example, when learning the knowledge points of the "hacking technology" chapter, teachers can combine teaching content to make a complete PPT to introduce students to many theoretical knowledge of hacker technology concepts, types, and hazards, and use virtual machines to conduct standardized demonstrations in the classroom. Learning by teaching is designed to allow students to master the theoretical knowledge, operating procedures and precautions of hacking technology through teaching, and to guide students to establish a comprehensive, systematic, objective and correct understanding of hacking technology and hacking tools, so as to pass a Knowledge teaching in small chapters continuously improves students' computer theory level. Secondly, when college teachers develop computer network security teaching, they can use the virtual machine's repetitive function and playback function to break through the important and difficult knowledge teaching, realize the expansion of knowledge, supplemented by perfect practical teaching, so as to highlight computer network security teaching The pertinence, practicality and effectiveness of the computer network will ultimately improve the effectiveness of computer network security teaching.

3.3 Achieve deep integration with network experiments

Under the new curriculum standards, network experiments are a vital part of computer network security teaching in colleges and universities, which directly affect the overall teaching quality and level. Under the traditional exam-oriented

education system, network experiments in college computer network security teaching are restricted by many factors such as time and space, hardware equipment, etc. It is difficult to ensure the number of students participating in network experiments, and students are required to participate in network experiments in groups, which will cause network experiments the lack of independence and completeness results in students with poor learning ability and level in the class not getting better learning, which greatly reduces the overall teaching effectiveness of network experiments. At present, the use of virtual technology in network experiment teaching is conducive to creating a real and good virtual network atmosphere for students, ensuring the independence of network experiments to a large extent, and ensuring students' learning effects.

3.4 Other matters needing attention

Under the new situation, social development has continuously improved the computer ability of college students. As colleges and universities, when carrying out computer network security teaching, they should pay attention to changing teaching concepts, innovating teaching models, fully respecting students' main teaching status, and stimulating students' interest and enthusiasm in learning , And then continuously improve students' computer application ability. However, the knowledge of computer network security is highly theoretical, covers a wide range, and has complex content. The traditional "indoctrination" theoretical teaching model cannot meet the requirements of the new curriculum standards. However, many colleges and universities still use the traditional teaching model. Over time, students will easily lose their learning Interest and confidence. Under the new situation, computer rooms in many colleges and universities have adopted centralized and unified management. After students turn off their computers, they will restore or delete data in a unified manner. The purpose is to ensure computer security and stability. The use of virtual systems will not interfere with the computer rooms. The running operating system conflicts, let alone affecting other course teaching. Using virtual machine technology, it can not only build the demonstration and experimental environment required for computer network security course teaching, but also innovate teaching modes and enrich teaching methods. When explaining many principles and knowledge, Should focus on letting students fully understand and master the principles through demonstrations and hands-on operations, greatly improving the quality and level of teaching.

4. Conclusion

To sum up, with the rapid development of network information technology, the general public is paying more and more attention to computer network security, and the demand for computer network security technical personnel is also increasing. As the main indicator of various types of talent training, colleges and universities should focus on cultivating more practical and comprehensive computer network security technical personnel. Based on this, in the process of computer network security teaching in colleges and universities, the role of virtual machine technology should be fully utilized. Specifically, a reasonable number of virtual machines should be configured according to actual conditions, teaching activities should be carried out according to specific content, and deep integration with network experiments should be realized Attention should also be paid to other problems that may arise in teaching. In this way, it is helpful to ensure the application quality and level of virtual machine technology in the teaching of computer network security in colleges and universities through various measures, and guide students to continuously improve the theory. Knowledge reserves, professional skills, and ultimately become high-quality computer network security technical personnel that meet the needs of social development.

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