Teaching reform of computer network security course in Colleges and Universities

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Abstract: Under the background of the rapid development of information technology, the application scope of e-commerce has been continuously improved, which also improves the application degree of computer. In order to conform to the characteristics of the development of the times, colleges and universities should strengthen the personnel training work, and cultivate students with strong quality and ability, and master systematic and comprehensive computer network knowledge in the new era. Therefore, teachers need to teach students the basic concepts, theories and technical methods of network security knowledge to ensure that they meet the characteristics and requirements of higher education. Based on this, this paper analyzes and studies the teaching reform of computer network security course in Colleges and universities, expounds the necessity of teaching reform of computer network security course in Colleges and universities, analyzes the characteristics of computer network security classroom in Colleges and universities, and puts forward the teaching reform strategies of computer network security course in colleges and universities on this basis, for reference.

Key words: Colleges and universities; Computer; Network security

Preface

In the current era of development, network security has become a hot issue of social concern. Network security is related to personal privacy and personal property rights. The reform of computer network security course in Colleges and universities has become the trend of education development in the new era, and also an important way to cultivate network security talents. Therefore, teachers should adjust and change teaching methods, mobilize students' learning enthusiasm, cultivate college students' practical ability, and guide students to form good quality.

1. The necessity of teaching reform of computer network security course in Colleges and Universities

1.1 Arouse students' learning enthusiasm

In the past education work, teachers will use narrative teaching methods to explain theoretical knowledge points, so that students can learn knowledge passively and operate on the computer, so as to master the key computer knowledge. However, this traditional teaching method is not conducive to students' learning. Students can only complete homework tasks through repeated practice. It is difficult for students to improve their enthusiasm and initiative. Through the education reform, students can improve their learning initiative in computer network learning, understand the characteristics of computer science, and enhance their interest in the subject.

1.2 Improve students' practical ability

In the past teaching, the traditional teaching mode only focused on the knowledge of teaching materials, thus ignoring the effective application of knowledge. The teaching reform of computer network security course should be fully combined with practical skills, so as to look at problems according to the actual situation of students, guide students to participate in practical exploration, better solve the problems in textbook knowledge, and master the key practical ability.

1.3 Promoting China's education reform

In the context of China's rapid economic development, network technology plays a more important role in value. In the context of the development of the new era, the reform has relatively high requirements for talents. In order to cultivate high-quality talents in the new era, the computer network security education in Colleges and universities should conform to the new characteristics of the development of the times, strengthen the overall way of China's education reform, so as to promote the development of China's education towards high quality.

2. Characteristics of college computer network security classroom

2.1 Diversity of learning subjects

Colleges and universities include two majors of general computer and network computer. The characteristics of students are also relatively complex. The general computer major pays more attention to the cultivation of practical talents in the new era, so as to lead them to learn more systematic and comprehensive knowledge and work better. After graduation, the vast majority of students majoring in computer network will devote themselves to network computer maintenance. Therefore, the teaching of computer network security course is very important.

2.2 Fast knowledge updating

Computer and network technology are in a state of rapid development. Therefore, the means of network attack will continue to develop. In order to deal with the means of attack, network security technology will be updated and reformed. Network security knowledge is in the process of continuous updating. In addition to its fast updating speed, it also has a feature that it involves a wide range of knowledge,

including the basic operating system, firewall and other resource allocation, as well as computer virus prevention, hacker attack and other elements. Therefore, the scope of knowledge of computer network security is relatively wide, and its practicality is relatively strong.

2.3 High requirements for preparatory knowledge

The course of computer network security is a highly professional subject, which requires students to master rich knowledge and certain knowledge of computer system structure principle before learning the course. Only by mastering these knowledge can students better understand knowledge during computer network learning, so as to improve their learning efficiency.

3. Teaching reform strategy of computer network security course in Colleges and Universities

In order to meet the development needs of the times, teachers should enrich classroom teaching content, stimulate students' learning enthusiasm, enhance college students' practical ability, and guide students to form good quality.

3.1 Teaching reform of curriculum theory

The computer network security course is a subject to cultivate students' basic network security theory literacy. The main purpose of the course teaching is to let students learn more theoretical knowledge and key technologies, so as to master the basic methods of network security protection. In order to cultivate students with network security awareness, enhance their network security ability, and lay the foundation for students' network management and maintenance skills in the future, teachers should teach students the most basic knowledge, so that students can understand the system attack methods commonly used by hackers, computer viruses, data encryption technology, firewall technology and other content.

First of all, the review of the leading course is added in the classroom teaching. The leading course of computer network security is computer network technology. The knowledge points are relatively complex. Many students do not master the network architecture and do not understand the working principle of network interconnection equipment, which also brings more obstacles to the teaching of network security course. Therefore, before the classroom teaching of network security, teachers should combine the learning characteristics of students and add two imported sections before the course, including computer network foundation, interconnected equipment, operating system and so on.

Secondly, the teaching content should be updated in time to avoid the phenomenon of breaking away from the requirements of the industry. Under the background of the rapid development of network technology, the means of network attack have also appeared one after another. The development of security technology is constantly updated. During the teaching period, teachers should update the teaching content in time, eliminate the old content, and supplement the latest teaching content, so as to make the content of the course closely follow the development trends of the industry. The explanation of the theoretical content should be combined with the events of network security to cultivate them to form good network security skills, so as to solve the problems of network projects and better deal with the reality of security. At the same time, teachers should also make full use of the real network, absorb more new knowledge and technology, and solve the problems encountered in real life.

Finally, pay attention to the combination of network security content and the actual characteristics of students' positions. The professional requirements of network security technicians are relatively high, and they need to have basic operating skills. Therefore, in teaching, teachers should start from the situation of employment, combined with the actual characteristics of students, guide students to apply what they have learned, create a good teaching situation, and clarify the key and difficult points of teaching, so that students can form good professional quality by participating in teaching activities. During this period, teachers should fully introduce the relevant teaching content of the vocational qualification certificate examination, so that students can complete the corresponding questions, so as to improve their ability and better cope with the examination.

3.2 Reform of teaching methods

The course of computer network security covers a large amount of content and covers a wide range, which contains rich teaching theory and practical theory. Therefore, in the process of teaching, teachers should effectively combine practice and theory, innovate teaching methods and methods, so as to constantly summarize and reflect, and formulate effective teaching strategies.

Heuristic teaching helps to improve students' awareness of initiative in learning and participate in classroom practice. Network security technology, hacker attacks and computer virus have promoted the high-quality development of network security technology. In the teaching stage, teachers' use of heuristic teaching helps to mobilize students' learning enthusiasm. For example, when explaining hacker attacks, the teacher plays the micro film "Confessions of hackers" to let students strengthen their interest in hacker terms by watching the film. When explaining the content of password cracking, teachers can first use the virtual computer to demonstrate the information of the brute force cracking tool to crack the weak password of the system, so that students can understand the basic encryption algorithm. When explaining DDoS attacks, students should be guided to deeply understand the reliability of the protocol, so as to inspire students to think about security risks, so as to further understand the content of security principles, and make full use of heuristic teaching to guide students to deeply understand the key and difficult points of knowledge, so as to form good teaching results.

The use of case-based teaching is helpful to introduce more actual cases, so as to enable more students to participate in it, and enable students to actively think about problems in learning through actual cases. For example, in the teaching of computer viruses, teachers can guide students to script a program and write a defense system through examples. Through this independent development, students can understand the principle, harm and prevention strategies of viruses.

Using task-based teaching activities, we should pay attention to the practice and exploration work, combine with the requirements of

network security teaching, scientifically and reasonably arrange the corresponding tasks, so that students can solve problems in the task. Among them, teachers can let students solve safety problems according to the overall plan, divide the syllabus and teaching progress into several sub tasks, and strengthen the understanding of knowledge by completing this series of sub tasks. Students should strengthen their personal understanding of knowledge, strengthen the linkage between new and old knowledge, and enable students to form key network maintenance ability in the learning process.

3.3 Reform of practice

Computer network security, as a fast-growing major in computer science, in order to enable students to keep up with the pace of the development of the times, in addition to providing students with solid computer network theory foundation teaching, we should also strengthen the cultivation of students' practical ability, so as to guide students to form the ability of integrating theory with practice. The knowledge of computer network security theory is relatively abstract and difficult to understand. Practice teaching can help students' theoretical learning, let students master more theoretical knowledge and improve their ability to learn knowledge. However, in practice, there are several problems in the teaching of computer network security: first, the teaching of computer network security course has high requirements for the conditions of the practice environment, and requires responsive technical equipment. Second, the leap between practical projects and theoretical knowledge is relatively large, and there are many difficulties in the design of experimental content. Third, the development of network security technology is relatively rapid. The application of the latest theories and technologies in practical teaching will help deepen students' understanding of network security.

Therefore, teachers should carry out practical teaching reform from the following aspects:

First of all, teaching training should be carried out in combination with professional ability, and corresponding practical teaching projects should be designed. If the teacher does not set specific learning tasks, the students' learning will not be started. When experimental conditions and time permit, corresponding teaching projects should be set up in combination with theoretical teaching and professional ability.

Secondly, organize teaching projects according to the specific work of the real situation. In the teaching of computer network course, part of the content is to learn the basic operation methods of security attack software, and part of the content is the experiment of security technology application. If the analysis cannot be combined with the real environment, it is not conducive to students' efficient learning and can not promote students' formation of good professional ability. Even if students can complete the project in accordance with the requirements, they still cannot apply it to practical work effectively, which is not conducive to solving key problems. In this case, it is necessary to solve problems from small to large, so as to build an integrated teaching practice path, promote students' learning and development, improve students' self-learning ability, and form good team cooperation ability.

Epilogue

To sum up, the reform of computer network security knowledge teaching in Colleges and universities is the key task of computer teaching reform, and it is also an important way to cultivate students' computer application ability. Therefore, under the background of network era, colleges and universities should strengthen the construction of network security course, promote the reform of network security course, so as to promote the sustainable development of teaching. Colleges and universities also need to cultivate more high-quality talents for enterprises, so as to better meet the requirements of the development of the times.

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