

Teaching Reform of "Network Security" Course under the Background of New Engineering

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Abstract

The "Network Security" course is a professional course with strong application and practicality in the computer field. It is one of the core courses of network engineering and computer network technology. The actual effect of its teaching has a close grasp of the students' professional knowledge Link. In view of the current state's attention to cyber security, and based on previous teaching experience and teaching materials, summarizing the characteristics and current teaching situation of the course "Network Security", and comprehensively analyzing students' basic knowledge mastery, listening status and learning effects, Considering the "teaching" and "learning" of the course, and discussing the importance of students' independent learning, classroom explanation and discussion, in order to achieve better classroom teaching effects.

Keywords

Network Security; Current Teaching Situation; Teaching Reform; Autonomous Learning.

1. Introduction

With the progress of the current society, the development of science and technology, and the continuous upgrading of new teaching equipment, the teaching reform in colleges and universities is imperative and continues to improve. Literature [1-3] pointed out that the traditional teaching concept and the emerging teaching methods have collided again and again, in order to find a suitable balance point and maximize the teaching effect. With the outbreak of the new crown epidemic in 2020, emerging teaching methods have spread globally with an unstoppable trend throughout the teaching process. The current discipline construction emphasizes classroom interaction, reforms teaching methods, takes students as the center, and makes reasonable use of modern teaching methods to impart knowledge [5-7]. In the face of students with uneven mastery of basic knowledge, this paper attempts to seek a teaching method that can achieve full coverage and maximize students' mastery of the "Network Security" course.

With the vigorous reform and development of science and technology and the continuous progress of computers, people pay more and more attention to the security of computers, and the country pays more and more attention to network security. "The highest state of network security is national security" and the proposal of "Sky, Earth and Sea[11]" shows that the current research and development of network security and employment prospects are on the rise. Network engineering and computer network technology are typical outstanding majors of new engineering. "Network Security" is a very promising course for network engineering majors. Its teaching content is complex and the class hours are slightly shorter. The overall teaching effect is closely related to the employment direction of students. This paper takes the 2019-level network engineering major of Guangdong University of Science and Technology and the 2020-level computer network technology major as the research objects. Through a comprehensive analysis of the current "Network Security" course class and the students' overall basic knowledge mastery, it attempts to carry out "Network Security". Classroom

teaching reform, as far as possible, teach students according to their talents, so as to improve students' professional knowledge mastery.

2. Currently Existing Problems

The main teaching contents of the course "Network Security" include a review of basic knowledge of computer networks, an overview of network security, system security and access control, viruses and their protection, data security, network security technology, and network site security. The chapter sets up the corresponding algorithm implementation experiments, and its precursor courses include computer network, data structure, operating system, C language, etc. To a certain extent, if students want to learn and master the course "Network Security" better, they need to have a solid foundation of basic computer knowledge as a foundation. However, due to the impact of the new crown epidemic in 2020, the current students' learning of these courses is during the epidemic period. The mastery of these basic compulsory courses is uneven, and traditional teaching concepts and methods cannot be used to maximize the teaching effect. Optimization may even have the opposite consequences, a vicious circle in which students don't understand, and they don't even want to listen.

2.1. Before Class

Based on the study habits and even living habits of students since childhood, the concept of pre-class preview is not very important, or even disapproved. At present, the pressure of students' professional courses is a little heavy, there are a lot of homework after class, and the fact that the clubs are attracted by exciting activities, students do not have enough time or even energy to conduct sufficient preview before class.

Or due to insufficient mastery of the basic knowledge of the pre-class, in addition to the obscure knowledge of the course, after wasting a lot of energy and time, it is still impossible to optimize the effect of pre-class preview. [4]

2.2. In Class

The current students are more prone to slack learning, false learning, and even resistance to learning. At present, the popularity of mobile phones and the numerous apps on mobile phones attract students' attention. Compared with traditional teaching periods, students tend to be distracted in class and unable to concentrate, which is called slack learning. The phenomenon of false learning has existed since students were in primary and secondary schools. Obviously, he studied hard in class and took good notes, but once he asked questions and answered questions, his performance was unsatisfactory or even a mess. At present, after the knowledge is taught in the class, the method of randomly asking questions according to the student number is used to test the students' mastery of the course knowledge. It is found that there are students who sit in the front row and seem to listen carefully to the class, have a positive attitude, and take neat and tidy notes, but their performance in answering questions is not ideal. The performance of this kind of false learning is not just the characteristics of a certain student, but the commonality, and it is worth looking for effective solutions in a targeted manner. Resistance to learning is manifested in not listening carefully in class, or even not listening at all, sitting in the last row, and being indifferent when asking questions, which is thought-provoking.

2.3. After Class

At present, according to the degree of difficulty of the content explained in the course and the actual mastery of the students, corresponding after-school exercises will be arranged to consolidate the learning. However, according to the situation of students' homework submission, about 5-8% of students do not submit homework, and about 40-50% of students' homework is highly similar. I learned from chatting with students that their review of

knowledge after class is basically zero. He believes that entertainment surpasses the main business of learning, blindly follows the trend, and shifts the focus of life from learning to enjoyment.

The current curriculum is still teacher-centered, and teachers occupy a dominant position in the teaching process. This situation may ignore students' mastery in the learning process, and is not conducive to the stimulation of students' interest in learning and the achievement of teaching effects. Even if it is optimal, it cannot improve the practical ability of students. Students do not care about course knowledge, which to a certain extent causes teachers and students to build a city behind closed doors. Students will not take the initiative to ask the teacher for a question they do not understand, nor even discuss it with their classmates. The teacher is also unable to grasp the specific learning situation of each student due to lack of energy, and cannot reasonably adjust the teaching plan and teaching progress according to the actual situation. . Lack of sufficient teaching communication between students and teachers, the teaching effect will naturally be greatly reduced. The traditional teaching concept is obviously not suitable for the emerging college students in the 20th century. It is urgent to find a better and more effective teaching method to strengthen students' knowledge, strengthen reform and deepen the student-centered and people-oriented teaching concept.

3. Teaching Reform Research

From the industrial revolution to the cyber storm, and even the development of cyber warfare, based on the current new engineering background, students are required to be able to adapt to the needs of modern industries, cultivate more active self-learning ability, active hands-on ability, and practical ability when encountering problems Analytical and problem-solving skills. This article looks for a network security teaching method that is more suitable for college students in the current new era from the three aspects of students' learning attitude, as well as before class, during class and after class in the teaching process.

3.1. Student Attitude

Contemporary students need to establish a correct outlook on life, values and world outlook, and the course "Network Security" can easily step on the boundary of the law. There are two aspects of attack and defense in network security, and as the upright young people standing under the party, students need to correctly understand the concept of attack and defense, which is a double-edged sword. Network security can be divided into advance protection before an attack occurs, in-process defense when an attack occurs, and security recovery after an attack occurs. Because of the popularization of computer technology and the proliferation of hackers to a certain extent, it is easy to turn defense into attack. First of all, students need to have a clear understanding. The premise of defense is to fully understand the principle of attack, so as to ensure that their methods are reasonable and legal in the actual operation process. In addition, it is also necessary to cultivate students' patriotic awareness and have a deep impression of the highest state of network security is national security, thereby triggering students' passion for learning this course.

3.2. Before Class

First of all, in order to save students' time and energy under high-intensity and numerous professional courses, students are grouped into groups of 4 to 6 for group study, supervising each other, making progress with each other, and improving their ability to learn independently. And can design the rules of cumulative points, according to the performance of each group each time, at a certain stage, according to the points based on a certain reward or punishment, fully mobilize the enthusiasm of students to learn.

According to the actual situation of the students, firstly look for the relevant professional knowledge about the "Network Security" course, including the prerequisite knowledge that needs to be used, sort it out, and transfer it to the Chaoxing Learning Platform for students to study before class. Secondly, a professional explanation video is recorded to explain the major and difficult points of this course in simple terms, so as to highlight and remind students that this preview needs to focus on the knowledge points. And upload the video to the Chaoxing Learning Platform. Then, a notice is issued to convey the content and requirements of the course to the students, and it is required that according to the group, the division of labor of each knowledge point should be clarified to everyone in the group, and the relevant list should be submitted for teachers to ask questions in class. Secondly, everyone in the group needs to watch the learning videos and materials according to the task, and even find relevant materials by themselves, learn the task knowledge points, and do a good job of previewing before class.

3.3. In Class

The whole class is divided into two subsections. The first subsection is mainly to explain the teaching objectives of this class in detail. According to the knowledge task points arranged on Chaoxing, students are arranged to discuss in groups and explain the knowledge points of their respective responsible parts to each other. During the group discussion, teachers randomly participate in the group discussion according to the actual situation of the group discussion, so that the students have a common sense of participation. Secondly, after the discussion within the group, each group is asked to summarize the problems and feelings they have encountered, and conduct inter-group discussions. For example, group A raises the problems encountered, and group B answers them, and takes corresponding measures to add points to activate the classroom atmosphere.

After the discussion among the groups, the teacher answers the common and individual questions in a unified way, and summarizes the important and difficult contents of this class to deepen the students' understanding and mastery. [8-9]

The second section of the course can be practiced in the classroom, using the method of "learning immediately, testing immediately", through the method of practice questions, in-depth understanding of the knowledge points, stripping the cocoon, and going deep layer by layer, can apply what you have learned to practice in solving problems, understanding is transformed into application. At the same time, it allows students to test their own mastery, so as to strengthen students' subjective initiative in learning.

3.4. After Class

According to the quizzes in the students' classrooms, analyze their understanding of knowledge, and appropriately assign homework on Chaoxing to test their real learning and mastery. The homework can reflect the weak links of the students' knowledge, and the weak links can be explained in key points and broken down one by one, so that they can be covered face to face. On the other hand, can you constantly adjust the teaching methods and plans of the course according to the homework situation, strive to implement the "tuning" from the first class to the last class, improve students' autonomous learning ability and practical ability in the general direction, and cultivate the basic learning literacy of modern and contemporary college students is to be a person, to be determined to do things, and to be student-centered.

4. Teaching Effect and Experience

The superstar-based teaching reform proposed in this paper is applied to the actual "Network Security" course, and the practical results show that it can effectively mobilize the enthusiasm of students to learn, change the status of students' learning from the attitude, and the degree of mastery of knowledge is obvious. improve. In the traditional mode, students playing mobile

phones, sleeping, mind wandering and other phenomena in class have also been greatly improved after adopting the new teaching mode. Students change from passive cramming learning to sponge-like autonomous learning. Set the knowledge points in the classroom to the corresponding knowledge points before class, learn to break through in small groups, communicate with each other, and discuss and learn as a whole in class when encountering those who do not understand, which not only improves the professional knowledge ability of learning, but also improves the ability of learning. Students' expressive ability, comprehensive and all-round development. Due to sufficient preview before class and targeted problem solving in class, students can grasp the knowledge points solidly. By doing exercises after class, they can achieve twice the result with half the effort, and further improve the students' independent enthusiasm for learning.

The success of this practice lies not only in the simple assignment of knowledge task points, but also in that teachers can reasonably divide knowledge points. Starting from the students' actual knowledge ability, the overall teaching task is divided from large to small, and divided into knowledge points that can be basically completed and solved by members of the group independently. This requires teachers to have a clear understanding of the teaching points of the course.

5. Conclusion

At present, superstar teaching has become a new teaching mode adopted by most college teachers to enhance the interaction between teachers and students and stimulate students' enthusiasm for learning. This paper analyzes the society's requirements for college teaching, as well as the actual learning situation and learning attitude of students, summarizes the common problems, and proposes to apply the superstar teaching model to the teaching of "Network Security", which has achieved good teaching practice results. In the follow-up, we will deepen the more reasonable teaching mode, and improve and perfect the current practical teaching work.

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