

On Ideological and Political Education in the Practical Course of Network Attack and Defense

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Abstract: The reform of “Curriculum Ideology and politics” in Colleges and universities is an inevitable choice to implement the party’s educational policy and the fundamental task of Building Morality and cultivating people. “Network attack and defense practice” is a skill course for junior students majoring in network engineering in the school of computer science and engineering of Linyi University. This course is particularly practical. However, in the experimental process of attack and defense, ideological and political education is particularly important. This paper analyzes the problems in the teaching process, and studies how to implement ideological and political education in teaching content and teaching methods. An improved method is proposed.

Keywords: Network attack and defense; ideological and political; practice

Acknowledgment: This paper is one of the achievements in the “network security” stage of Ideological and political courses;

Supporting projects: Research and Practice on the construction of the training system of computer science and technology majors centered on cultivating talents (JG2021M46); research on the case-based teaching reform of practical courses of Software Engineering Majors Based on results (JG2021M48); research on the ideological and political teaching reform of programming courses (G2021SZ28).

1. Introduction

In order to implement the guiding outline of Ideological and political education in Colleges and universities issued by the Ministry of education, Linyi university has comprehensively promoted the construction of Ideological and political education in courses. How to organically combine the course content with ideological and political education is a new direction of teaching reform. At present, there is a shortage of social network security talents, and the talent training structure is unbalanced. Network security technology is an important technology related to national security. The network attack and defense practice course involves many contents and covers a wide range. There are many destructive contents in it. If ideological and political education is not carried out, a group of hackers may be cultivated. Therefore, the network attack and defense practice course needs to run through ideological and political education to cultivate excellent talents.

2. Problems encountered in carrying out ideological and Political Education

There is no in-depth understanding of the background, causes, functions and development of each knowledge, which leads to insufficient teaching interest, lack of Ideological and political elements, and only stay at the level of imparting knowledge. Without a deep understanding of the course content, ideological and political elements cannot be accurately refined in the course design and teaching process

2.1 Teachers’ own research is insufficient

Because of the new curriculum, some teachers involved in many complex experiments when preparing lessons, and may feel that it is good to do the experiment. Therefore, in the teaching process, they paid too much attention to the success of the experiment and the operability of the content, ignoring the ideological and political education in the implementation of the experiment.

2.2 Lack of research on Ideological and political methods of curriculum

In most cases, the ideological and political teaching of the course stays at the level of oral teaching, which is relatively boring. There is a situation of turning professional courses into “Ideological and Political Courses”. The ideological and political content of the course takes a long time, up to about 15 minutes, and sometimes it is even separated from the content of network attack and defense practice, which makes students lose interest in learning.

3. Formulate ideological and political teaching objectives

The teachers of the course group learned lessons, summarized experience, repeatedly conducted teaching and Research on the course objectives, and explored how to better integrate ideological and political elements into professional classes and how to integrate different ideological and political contents according to different courses. For this reason, after the ideological and political education is added to this course, the teaching objectives are reformulated, As shown in Table 1 network security ideological and political teaching objectives:

Figure 1 Teaching objectives

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|-------------|---|
| objective 1 | Through practical teaching, students can understand and master the basic methods of network attack and defense, be able to analyze engineering problems with professional basic principles, put forward system solutions, give the overall architecture design of the system, and cultivate students' engineering development ability |
| objective 2 | Correctly use network tools to prevent intrusion, master the network defense steps and common attack methods of hackers, and use the legal knowledge of network security to maintain network security, restrain yourself, correctly use various protection tools to maintain national network security, and cultivate patriotism. |
| objective 3 | Be able to reasonably set up a development team and divide roles. Team members should have clear work tasks and obtain unanimous approval of the design scheme, technical route, development standard bricks and constraints through communication. Cultivate students' teamwork and communication skills. |

4. Reform the teaching content of the course and excavate the ideological and political elements

Network attack and defense practice course is a professional course of computer network engineering specialty, which has the characteristics of wide range of knowledge, strong comprehensiveness, and rapid renewal of content and knowledge system. This paper carries out ideological and political reform from the following perspectives.

4.1 Integrate the content of Ideological and political courses and collect diversified materials

On November 7, 2016, the Standing Committee of the National People’s Congress issued the network security law of the people’s Republic of China, as shown in Figure 1, making the practice of network security truly legal. When explaining the network attack and defense practice course, we should find the resonance point and entry point with the knowledge content of this course, realize the seamless connection between Ideological and political content and professional knowledge, and collect relevant videos, typical cases and other materials to show students. First, we should improve students’ interest in learning, but let students know that there are laws to abide by in network security events and can’t do illegal things.

4.2 The content should run through professional ethics and enhance the sense of responsibility

We should make a comprehensive analysis of the training of network security talents, pay attention to ideological and political infiltration, give consideration to and supplement the ideological and political resources of this course, introduce cutting-edge technologies and hot issues of the discipline, cultivate patriotism and cultivate good professional ethics.

Case: when teaching network attack, many attack methods and security tools will be involved. The so-called “know yourself and know your enemy, and you will be invincible in a hundred battles”. In the process of introducing the use of the tool, join the laws and regulations in network security, and tell students through examples what punishment they will receive if they violate the law. During the SQL injection experiment, let students understand the injection process and find that there will be many loopholes in the web. We should establish a good sense of responsibility, consciously write the correct code when writing SQL code, and always contact the network security law. Therefore, we should educate and guide students to establish professional ideals and professional ethics, and enhance their sense of professional responsibility.

4.3 Design excellent teaching plans and enhance law-abiding awareness

When talking about hacker attack methods, we introduce a case: in February 2021, hackers successfully penetrated the computer system controlling the water treatment facilities in alderma, Florida. By tampering with remotely controllable computer data, the attacker changed the chemical content in the local water supply and raised the level of sodium hydroxide lye. Fortunately, it was found in time and no casualties were caused. This case can make students think and analyze: why attack the water treatment system? How to prevent? It further shows that hacker attacks are no longer simply destroying systems and data, but have increased to destroying

people's health, lives and property. Once again, introduce laws and regulations related to information security, deepen the impression, restrict students, enhance students' awareness of discipline and law-abiding, and be a moral citizen.

5. Conclusion

The integration of Ideological and political education in the curriculum is a process of spring and rain, moistening things silently. Teachers need to imperceptibly improve students' sense of professional mission and cultivate students' Patriotism in the process of professional knowledge teaching. Teachers should integrate laws and regulations, professional quality, professional mission, etc. into the curriculum, so that students can realize the relationship between national interests and network security, and combine national development with self positioning, Enhance students' legal awareness in cyberspace and help them establish correct network ethics.

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