

Research on Strategies for Cultivating College Students' Network Information Security Literacy from the Perspective of Big Data

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Abstract: With the widespread application of network technology and big data technology, various online applications have become an important part of college students' life and study. However, due to the uncertainty of the network itself, many college students have immature understanding and awareness of network security and are vulnerable to becoming victims when using the network. Therefore, it is essential to cultivate college students' network information security literacy. Based on the perspective of big data, this study analyzes the specific problems existing in college students' network information security literacy and proposes strategies and methods for cultivating network information security literacy that are conducive to the growth of college students. These strategies and methods can provide a reference basis for related fields of research.

1. Introduction

With the development of internet technology, the internet has become an indispensable part of modern life and learning. University students are the main force of internet usage, and more and more students consider the internet as an important tool for daily learning and life. However, the uncertainty and complexity of the internet pose great challenges to internet security, especially for special groups like university students, who need to pay more attention to protecting personal and other information. With the widespread application of big data, network security issues have become more prominent and severe. Personal information leakage and sale of university students has become increasingly common, seriously damaging the interests and privacy of students. Even more serious, this situation provides opportunities for illegal criminal activities such as telecom fraud. Therefore, improving the network information security literacy of university students has become an important task of this era. This study aims to analyze the existing problems of university students' network information security literacy from the perspective of big data, and propose effective cultivation strategies and methods, in order to provide a reference for related research fields and industry development.

2. Understanding the big data environment correctly

With the continuous development of information technology, big data has become a hot topic, attracting more and more attention. The connotation of big data is relatively abstract, and its definition refers to the use of massive data information resources, screening out data information that is of specific value and meaning to users, and adopting professional processing methods to produce data information that users need. In different industries, the role and value of big data are also different. For college students, mastering professional techniques for utilizing and processing data information is of great significance^[1].

In today's society, the internet has become the primary means of information transmission and an important carrier of information. The leakage of online information can affect the security of user data usage and may cause harm and impact to individuals and matters involved. In the current intense social competition, the information protection awareness of college students may be weak, and it is easy to have problems with online information leakage, which can hinder and affect the normal and stable life of college students and even limit future development. If the information transmitted by college students in their daily life or communication is intercepted by criminals and used for illegal activities, it will cause corresponding damage to their interests. Therefore, it is necessary to cultivate the network information security literacy of college students, ensure that they can correctly understand and pay attention to the important value of network information security, and improve their awareness of network information security.^[1]

Understanding the big data environment correctly is of great significance in improving the information literacy of college students. In the era of big data, strengthening the cultivation of college students' network information security literacy can not only ensure the information security of college students but also promote their learning and development.

3. Analysis of the current situation of college students' network information security literacy

Network information security literacy is a more important form derived from network information, and its essence is the basic ability that people must have and master under the background of global informatization. Information literacy is also a basic requirement for different members of contemporary society to adapt to different work in an informationized environment. In practical application, the network information security literacy of college students may be influenced by various factors, which may interfere with various links of different audiences and information literacy abilities. Currently, many college students have security awareness when using computers. They can proactively install dedicated anti-virus software for their computers and regularly clean their internet history. When a student's account information is leaked, many students will take measures, such as changing their passwords or personal information, to protect their account information security. This shows that college students as a whole have awareness of protecting personal privacy and are more concerned about personal information security while having basic network security protection knowledge. They can immediately solve problems when they are discovered and take specific measures. However, there are still some college students who are in a passive state of protecting personal information. They have a relatively lack of understanding of network technology knowledge, which leads to being in a passive position when personal privacy is leaked or stolen when using the network. Therefore, college students need to have a more correct and in-depth understanding of network technology knowledge and master some basic computer information maintenance and operation skills as much as possible to improve personal information security. At the same time, universities should strengthen network information security education for students, guide students to form correct network security concepts, and improve their network security protection capabilities.

4. Issues with the network information security literacy of college students

4.1. College students have insufficient awareness of network information security

With the continuous development and popularization of network technology, the frequency of college students' learning and living in the network is increasing, and network information security issues come along with it. However, due to the lack of sufficient information security awareness, college students are easily caught in various information security risks. Although existing scientific and technological means can provide protection for college students' information security, this is only passive protection of information security. More importantly, college students need to have the ability to actively prevent information security risks.^[2]

On the one hand, college students are becoming more serious and mature in their online activities, but they still lack sufficient awareness of information security. They often only focus on the convenience and speed of online activities, ignoring the importance of information security. They have a limited understanding of basic network security, and blind spots in personal privacy protection, password security, and other aspects. On the other hand, college students lack awareness and measures to prevent security incidents such as network attacks and fraud, and are vulnerable to attacks from viruses, Trojan horses, and other malware, resulting in problems such as personal information leakage and financial losses.^[3]

4.2. Lack of network information security knowledge of college students

Currently, the lack of information security knowledge among college students is a relatively serious problem. Although college students are becoming more serious and mature in their network operations, they still lack information security knowledge, which leads to them becoming victims of network information security incidents. In the process of professional learning, college students pay more attention to the cultivation of theoretical knowledge and practical skills, while schools do not attach enough importance to the cultivation of information security literacy, and even fail to set up corresponding courses, resulting in insufficient information security education for students.^[4]

4.3. The network security prevention ability of college students is low

In the current era of informationization, the rapid development and widespread application of information technology have made it more convenient and fast for college students to access and use personal information. However, it has also provided convenience for criminals, who can use this information to carry out illegal activities such as network attacks and identity theft. In network information activities, even if their account and password are leaked, many college students lack the awareness to change their passwords in a timely manner. Additionally, many college students are not familiar with the use of network keys and only use a single password, which poses a great threat to their network security. Because college students are more concerned about the cultivation of professional skills, they tend to neglect the cultivation of their own information security. This also leads to a lack of personal information protection ability, making it easier for criminals to obtain and use college students' personal identity information, resulting in serious impact and harm to college students in the use of network information security.^[5]

4.4. Existence of Network Security Breach Behavior among College Students

Currently, more and more college students spend long hours on the Internet, but their ability to prevent network security threats is lacking. These students lack basic knowledge of network security

and are unable to effectively protect their personal devices or prevent online scams. In addition, malicious actors take advantage of these vulnerabilities by disseminating false information and advertising, sending spam emails, and engaging in fraudulent activities that negatively impact the lives of college students. The existence of these information security breaches has seriously threatened the personal and financial security of college students. Therefore, society, universities, and college students themselves need to attach great importance to the cultivation of college students' network information security literacy.

5. The analysis of the reasons for the problems in college students' network information security literacy

5.1. Insufficient education on network information security for university students

Nowadays, network security has become an important part of national security. As the backbone of the future society and the hope of national construction, college students need to effectively improve their awareness of security, start with themselves, and make every effort to ensure national security. Therefore, the network security education of college students should not be ignored by higher education institutions. Relevant courses should be actively offered to provide training for college students, which is also an important content of humanistic education and safety education on university campuses. However, many college students only begin to have contact with relevant network products after entering university, so their awareness of network information security education may be relatively weak. It is precisely because of the problem of insufficient education that college students have relatively weak awareness of network information security.^[6]

5.2. College students have an excessive reliance on the internet.

Firstly, the dependence of college students on online learning is increasing. With the continuous development of Internet technology, college students are more inclined to use online learning to acquire knowledge and information. This learning method is undoubtedly a convenient and fast option, but it also has some problems. For example, college students may waste a lot of time on the Internet, which can affect their learning outcomes. In addition, when college students use the Internet for learning, they also need to pay attention to cybersecurity issues, such as avoiding the leakage of personal information and avoiding clicking on unknown links.

Secondly, the dependence of college students on online shopping is increasing. In the Internet age, online shopping has become a common phenomenon among college students. Online shopping is not only convenient and relatively cheaper, but also enhances the consumption experience. However, online shopping also has many security risks, such as personal information leakage, online fraud, etc., which may cause significant losses to college students.

Moreover, the dependence of college students on their mobile phones is becoming increasingly evident. With the popularity of smartphones, college students have become more and more reliant on their phones, even to the point of developing a strong addiction. It is common to see college students playing with their phones in classrooms, study rooms, and libraries. However, excessive reliance on phones can lead to a lack of concentration, which can affect the quality of their studies and daily lives.^[7]

5.3. There are some relatively hidden unsafe factors in the network

There are some hidden security factors in the network, and the network security education organized for college students has a direct impact on their growth. However, some higher education

institutions currently simply equate college students' network security education with network operations, completely ignoring the content of network humanities education and security education in network education. This phenomenon may have a negative impact on college students' network security awareness^[7]. The continuous development of social science and technology and the change in consumer awareness have led to many college students integrating modern consumer methods, such as modern loans, into their daily lives. At the same time, many network finance companies bring their promotional content into colleges and universities. Some online lending platforms occupy the college student market, causing interference in their lives and being closely related to their lives. These hidden security factors may cause some college students to fall into a trap of high-interest loans, seriously affecting their normal life and mental health. Therefore, it is necessary to strengthen college students' network humanities education and security education, improve their awareness and prevention ability of network security factors, and protect their network security and physical and mental health.^[8]

6. Analysis of Strategies for Cultivating College Students' Network Information Security Literacy from the Perspective of Big Data.

6.1. Organizing cybersecurity education targeting college students

Currently, there is a significant lack of awareness among college students regarding network information security, mainly due to the insufficient emphasis on cultivating their awareness of information security in higher education institutions, where information security education is often neglected. In order to improve college students' awareness of information security, higher education institutions should organize various forms of activities, such as freshman orientation, safety knowledge lectures, and network literacy competitions, to help college students improve their awareness of prevention, their ability to identify network information content, and to promote more comprehensive and thoughtful protection of personal information, thereby ensuring a safe life for college students.^[9]

6.2. Offering courses related to network information security

To improve the information security literacy of college students, higher education institutions should offer courses related to network information security and make them compulsory. In this way, students can master the computer equipment and software operation modes proficiently, especially in terms of identity information and bank cards. In addition, a step-by-step approach can be taken to gradually cultivate students' basic knowledge and skills in network information security, effectively improving their information security literacy.^[10]

6.3. Organizing and carrying out practical activities related to network information security is necessary

Higher education institutions should organize a variety of network information security practical activities to promote systematic learning of information security knowledge and improve the information security literacy of the institution's students. Among them, appropriate organization of social information security seminars can ensure that professional information security personnel can teach students related knowledge and participate in the institution's curriculum construction. These practical activities include guiding students to participate in knowledge and operation competitions, promoting learning through competitions. In addition, making computer security awareness an elective course, innovating relevant concepts and methods, and applying the learned knowledge to

the actual course teaching process, is also an important means to improve students' network security awareness and their ability to cope with the complex network world. Therefore, students should establish network security awareness, apply the knowledge they have learned to specific learning and life situations, in order to create a more harmonious, safe, and stable campus network information environment.^[11]

6.4. We should attach great importance to guiding the ideological and political education on the internet for college students.

To promote cybersecurity education for college students, educators in higher education institutions should guide students to have a correct understanding of network security issues and pay attention to consumer ideologies that are accepted and recognized by students. This can prevent negative influences on students, help them scientifically avoid network risks, and combine cybersecurity education with ideological and political education. At the same time, educators in higher education institutions should incorporate internet information discernment education into their daily work, guide students to obtain valuable information from complex network information, establish good value judgment criteria, and enable students to calmly deal with different network information content and develop self-discipline habits and abilities.^[12]

In addition, it is also necessary to establish practical education bases for cybersecurity ideology, to help college students gain information security experience and broaden their horizons, and ensure that they have the ability to apply network information.^[13]

7. Conclusion

In summary, the current society is in a critical development stage in the context of the big data era, and college students in higher education institutions are the main group using network information. Therefore, appropriate education on information security knowledge and skills is necessary. The development of information technology in China has promoted the construction of a more complete information security legal system. Through systematic learning of Internet knowledge, college students can further understand the importance and value of information security in their online life, and understand the related responsibilities they need to undertake when violating regulations. At the same time, it is necessary to ensure that college students can consciously comply with relevant laws and regulations, and learn to use legal weapons to safeguard their legitimate rights and interests when their interests are infringed. This is itself a professional ability that college students need to possess. Therefore, when studying the use of networks by college students from the perspective of big data, it is necessary to combine their professional needs and characteristics, cultivate their network information security habits, and help them correctly master the methods of using network information and improve their information security literacy through education on network information security.

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