Design and Integration of Ideological and Political Education Content in the "University Information Technology" Course

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Abstract: In the context of the new era, information technology education in colleges and universities should not only impart professional knowledge but also integrate ideological and political education elements to cultivate students' comprehensive qualities and a sense of patriotism and love for the country. Taking the "University Information Technology" course as an example, this paper elaborates on how to skillfully integrate ideological and political elements into the teaching content of each chapter. Through rich teaching materials and diverse teaching methods, students are guided to enhance their national self-confidence, social responsibility, and innovative spirit while mastering information technology knowledge.

Keywords: Information technology education in colleges and universities; Ideological and political education; University information technology course

1. Introduction

In today's information-based society, information technology has become a crucial driving force for social progress and development. The "University Information Technology" course takes information technology and its applications as the main thread, introducing the main theories and related knowledge of information technology applications. It constructs a knowledge system covering aspects such as information acquisition, coding, transmission, organization and storage, data processing and analysis, and information display.

The teaching objectives of the course not only aim to teach professional computer knowledge and basic operation skills but also shoulder the important task of cultivating high-quality information technology talents with correct worldviews, outlooks on life, and values. Through multiple rounds of teaching, the ideological and political elements in the course have been iteratively updated in terms of both content and form. In the seven-chapter teaching content, each chapter uses various teaching methods such as PPT, blackboard writing, and videos to enable students to master relevant information technology knowledge. At the same time, various

ideological and political elements are integrated to let students feel the rise of China's information technology to establish the lofty goal of building a strong scientific and technological country and enhance their national self-confidence and pride [1–3].

2. Design and integration of ideological and political elements in each chapter

2.1. Introduction to information technology

The teaching content of this chapter mainly involves information and the information society, information technology, computational thinking, and information security. Integrating ideological and political elements in this chapter plays an important role in opening the door to students' wisdom and consolidating the foundation of the course's educational function [4].

In the teaching of the information society section, by playing videos such as "Digital Agriculture Guardians: Pest Monitoring Equipment Facilitates Efficient Crop Protection" and "Solving Key Technical Problems! The 'Yangling Science and Technology Imprint' in a Glass of 'Wine'", students can not only visually experience the extensive application of information technology in modern agriculture, but also be guided to think about how information technology contributes to national agricultural modernization. This stimulates their interest in agricultural science and technology and their sense of pride in national development.

In the teaching of data, information, wisdom, and their relationships, the deeds of teams like Zhao Hongzhang's from Northwest A&F University are integrated into the teaching content. This showcases the wisdom and responsibility of the people from Northwest A&F University, inspiring students to learn from these role models, be bold in exploration, and constantly innovate. When explaining the five major functions of information systems, the connotation of "systemic" thinking is introduced. This guides students to recognize that any system is an interconnected and interacting whole, cultivating their ability to think from a macroscopic perspective [5–7].

In the teaching of information technology application fields, by demonstrating China's significant achievements in the information technology field, such as 5G technology and artificial intelligence technology, students can deeply feel the power of building a strong scientific and technological country. This inspires them to establish the lofty aspiration of serving the country through science and technology. At the same time, students are reminded that the rapid development of information technology is profoundly changing the way humans think. In the face of future challenges, we need to keep learning, maintain an open-minded attitude, and be brave to accept new things.

In the teaching of network security education, the importance of information security is emphasized. By explaining network attack methods, computer virus threats, and other content, students are made to understand that the interests of the country and the people are of paramount importance. This helps them establish a correct view of network security and enhance their self-protection awareness [8].

2.2. Computer systems

The teaching content of this chapter mainly includes basic computer theories, computer working principles, software, microcomputers, and embedded systems. Integrating ideological and political elements in this chapter aims to cultivate students' qualities of learning from history, unremitting struggle, self-reliance, and the pursuit of excellence [9].

In the teaching of the history of computer development, the birth of China's first electronic tube

computer will be mentioned, allowing students to feel the arduous beginning of China's computer industry. When introducing supercomputers, combined with the video display of the successful completion of China's Shenzhou spacecraft manned flight missions, students will feel proud of the brilliant achievements of China's aerospace industry.

In the teaching of Turing machines and von Neumann's ideas, the working process of Turing machines is demonstrated through blackboard writing with examples. This emphasizes the spirit of exploration and at the same time encourages students to practice hands-on, cultivating their problem-solving abilities. Through the introduction of von Neumann's optimistic and open-minded life, the concept of a healthy lifestyle is integrated. This guides students to pay attention to their physical and mental health and develop a positive attitude towards life.

In the teaching of operating systems, China's HarmonyOS is mentioned. This showcases the excellence of domestic operating systems, enhances students' national pride and awareness of independent control, and enables students to recognize the importance of independent innovation and research and development. From the perspectives of national and technological security, students are led to understand that independent innovation is the general trend.

After a systematic review of the teaching content of this chapter with students, through methods such as assigning after-class group homework for 3–5 students and randomly selecting one student for assessment, students are encouraged to take the initiative in learning. The importance of teamwork is emphasized, cultivating their problem-solving and communication skills, and making the ideological and political element of "unity is strength" deeply rooted in their hearts.

2.3. Computer networks and applications

The teaching content of this chapter mainly includes basic network knowledge, local area network, and Internet technology and applications. Integrating ideological and political elements in this chapter aims to build a knowledge network and strengthen students' sense of responsibility.

In the teaching of computer network reference models, by drawing an analogy with the operating mechanism of human society, students are enabled to understand that everyone is an important node in the "social network." Only by realizing personal value and enhancing social responsibility can they contribute to their families, society, and the country.

In the teaching of basic data communication, taking Huawei as an example, its rapid development in the field of information and communication and the importance of independent research and development are expounded. This is to boost students' self-confidence and courage so that they dare to face international competition bravely. Additionally, the deeds of Charles K. Kao, the "Father of Fiber Optics", are briefly introduced. Through this inspiring story of pursuing scientific dreams, students are encouraged to be bold in breaking through and innovating and to contribute their efforts to scientific undertakings.

In the teaching of IP addresses, by integrating the science-fiction movie The Wandering Earth, students are made aware that Earth's resources are something that all of humanity should pay attention to. This guides students to think about the forward-looking nature of scientific and technological development and the significance of global cooperation, thus strengthening students' sense of national identity and their awareness of the community with a shared future for mankind [10].

2.4. Database technology

The teaching content of this chapter mainly includes the necessity of data management, the development of data management technology, and database management technology. Integrating ideological and political elements in this chapter aims to stimulate students' interest in exploring data treasures and cultivate their innovative spirit.

In the teaching of the necessity of data management, starting from the question of why databases are needed, specific daily application cases in industries such as banking and finance, universities, the aviation industry, the telecommunications industry, and the railway industry are introduced to help students understand the importance of databases. When comparing the similarities and differences between Excel and databases, students are guided to recognize the advantages and application scenarios of databases.

In the teaching of database management systems, by listing mature domestic and foreign database software, students are made to realize the importance of databases as the underlying technology of the information and communication technology (ICT) innovation industry, stimulating their sense of urgency to solve technological bottleneck problems. During the teaching process, a brief introduction to Edgar Frank Codd, the "father of relational databases," is also given. As a philosophy doctor, he was able to face problems directly in practical work and solve them creatively. This is aimed at encouraging students to be brave in innovating.

In the teaching of integrity constraints in relational models, through case analysis of the integrity of students' academic performance and the Apple industry, students are guided to understand the importance of data consistency and integrity, cultivating their rigorous attitude towards work. In the classroom, a thinking and discussion topic, "How to take effective measures to ensure the integrity of academic performance and the apple industry," is launched, and students are asked to discuss it on the Chaoxing Learning Platform. This form is widely welcomed by students, and 1,380 students across the school participated in the theme discussion.

2.5. Data analysis and SPSS applications

The teaching content of this chapter mainly includes the basic knowledge, processes, and common tools of data analysis and processing. Integrating ideological and political elements in this chapter aims to cultivate students' interest in unlocking knowledge treasures and their sense of responsibility for scientific research innovation.

In the part of explaining why data needs to be mined and analyzed, data in the information age is analogized to a newly discovered oil field by humans. It is pointed out that its value lies in mining and component analysis before it can serve humanity. Through long-term and multi-round detailed analysis of the case of "the number of spikelets per ear of 100 wheat ears", it helps farmers predict crop yields and enables scientists to reveal genetic laws. This is an intuitive manifestation of the value of data analysis. In addition, in the latest 2024 Shanghai Ranking's Global Ranking of Academic Subjects, four disciplines of Northwest A&F University are ranked among the top 10. The agriculture discipline ranks 3rd, water resources engineering ranks 5th, food science and engineering ranks 8th, and veterinary medicine ranks 8th. This is not only an international recognition of China's agricultural scientific research strength but also a great boost to the pride and professional identity of every agricultural and forestry student.

The establishment and development of the SPSS company serve as a successful example of students' innovation and entrepreneurship. Starting from a small software tool and growing into a well-known data analysis software provider, the story of SPSS tells students that the combination of knowledge and practice can

unleash infinite possibilities. In the course of learning, students are reminded that they should not only master the usage skills of tools like SPSS but also deeply understand the logic and thinking behind data analysis. They should avoid rote memorization and learn to apply knowledge flexibly, because the real purpose of learning is to apply it and make achievements in the future, rather than just to pass a course-ending exam.

2.6. Multimedia technology

The teaching content of this chapter mainly includes the basic theories of multimedia, compression coding, and processing technologies. Integrating ideological and political elements in this chapter plays an important role in stimulating students' interest in exploring the universe and enhancing their ability to vividly display knowledge.

In the teaching of multimedia compression and coding, through examples of Huffman coding, intuitive graphics and animations are used to replace complex text descriptions, making the originally dull theory vivid and interesting. This teaching process not only deepens students' understanding of knowledge but also inspires them to think from multiple perspectives when facing problems and seek the optimal solution[11–13].

In the teaching of PPT design and production, students are allowed to experience the power of information visualization firsthand. At the beginning of the teaching, what is conveyed to students first is that a well-designed PPT can not only convey information but also reflect an individual's ability and professional quality. Whether it is a project report, a graduation thesis defense, or a future workplace presentation, good PPT-making skills will be an indispensable asset for everyone. Mastering this skill is a difficult learning process, and only perseverance can lead to success.

2.7. New-generation information technology

The teaching content of this chapter mainly includes the Internet of Things, big data, cloud computing, and artificial intelligence. Integrating ideological and political elements in this chapter plays an important role in stimulating students' interdisciplinary innovative thinking.

As the course progresses, teachers lead students into the vast world of new-generation information technology. Through group discussions and classroom interactions, teachers and students jointly explore the new-generation information technology used in the "multi-target tracking of beef cattle" case, allowing students to feel the great potential of information technology in solving practical agricultural problems. This is not only a learning opportunity for technology but also a collision of ideas, encouraging students to think across disciplines, be brave in innovation, and extend the reach of technology to every corner of agriculture to contribute to the grand goal of rural revitalization through science and technology.

In the last 10 minutes of the class, teachers not only review the previous knowledge points but also emphasize that knowledge accumulation is a difficult process that requires perseverance [14]. The value of knowledge lies in application, not simple memorization. Just like the entrepreneurship stories of the three graduate students who developed SPSS and the leap in China's aerospace technology, they are all the results of the perfect combination of theory and practice.

3. Conclusion

The teaching design and integration of ideological and political education content in the curriculum aim to deeply explore ideological and political elements. Through various ideological and political teaching

contents and diverse teaching forms such as playing short videos, animations, and group discussions [15], students' ideological and political feelings can be cultivated subtly. This not only enhances their national self-confidence, social responsibility, and innovative spirit but also teaches them how to face future challenges and how to cooperate and progress together in study and life.

The teaching team has carried out multiple rounds of practice for different ideological and political elements in the course and achieved good results, receiving unanimous praise from students. The "University Information Technology" course has been recognized as a provincial-level ideological and political demonstration course in Shaanxi Province. This paper discusses our exploration and specific practice in this course, hoping to provide references for colleagues teaching similar courses on how to integrate ideological and political elements. Of course, due to limited capabilities, if there are any inappropriate points in the article, please feel free to criticize and correct them. In the future, we will continue to explore new paths for curriculum ideological and political education, keep pace with the times, constantly optimize the ideological and political content and methods in teaching, and contribute to cultivating more idealistic, capable, and responsible young people in the new era of China.

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