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Research on Teaching Reform of E-Commerce Security Course based on OBE Concept

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Abstract: "E-commerce security" is the core course of e-commerce major, in order to improve the learning effect of students, through the introduction of rain classroom before class, class, after-class teaching reform and student evaluation reform, improve the students' classroom participation, and better record the students' classroom learning state, improve the students' learning enthusiasm, and achieve better teaching results.

1. Introduction

Electronic Commerce Security is a basic compulsory course for economic management electronic commerce major undergraduates. According to the development orientation of Beijing University of Petrochemical Technology and the characteristics of the students in the School of Economics and Management, this course closely focuses on the teaching concept of "student-centered", aims at continuously improving the "advanced", "innovative" and "challenging" of the course, and aims at cultivating application-oriented talents with good comprehensive quality, high innovation ability and strong practical ability. This course systematically teaches the basic concepts and needs of e-commerce security, explains in detail the specific principles of information security technology, Internet security technology, digital certificate and public key infrastructure PKI according to the security needs of e-commerce security, and strengthens the application of system concept in dealing with complex problems. This course adopts a variety of flexible teach-learn methods and teach-learn means such as theoretical learning, in-class practical training, after-class group interaction feedback, etc., to help students master the basic theories, knowledge methods and common technical tools of e-commerce security, cultivate students' information security ability, and enable students to initially

have the ability to independently and completely deal with more complex economic management practical problems. At the same time, improve the humanities and social science literacy, social responsibility, and establish professional ethics.

Wu et al. analyzed a variety of teaching methods used in the current "Law + Business Administration" double degree program, and put forward the "four-step case teaching method" which is conducive to the integration of composite professional education and innovation and entrepreneurship education in political science and law universities [1]. The article emphasizes that teaching methods have a profound impact on the development of students' ability. The article also stressed the importance of integrating the "law + Business Administration" double degree program with innovation and entrepreneurship education to cultivate high-quality talents who meet the needs of society. Liu et al pointed out that music education in colleges and universities has always been the focus of social attention, and the reform of music education is also the core issue at present [2]. This paper will analyze the curriculum reform of music teaching methods for college music education majors, and put forward the corresponding reform measures. Chen et al. multimedia network teaching based on text data communication can make better use of sports resources in college physical education [3]. Multimedia technology combines computer and video technology. It refers to the combinati on of two or more sounds and images to form a system that can transmit information. When the initial key changes slightly, the hash bit change rate of the scheme is greater than the threshold value of 0.451, which indicates that the hash algorithm in this paper has good key sensitivity. The more sensitive the perceptual hash is to the change of the key, the more difficult it is for the attacker to estimate the key, and the better the security of the hash key. Therefore, the hashing algorithm in this paper can be proved to be secure through the above experiments. By injecting ideological and political education elements and cases into the course content, Wang et al. stimulated students to think and pay attention to social issues [4]. Optimize teaching methods, adopt interactive teaching and collaborative learning, stimulate students' thinking and innovation ability, and cultivate a sense of teamwork. To carry out practical teaching, organize students to visit enterprises, field visits and other activities, so that they can experience the application of the operating system in practical work, and cultivate students' hands-on ability and problem-solving ability. Strengthen emotional education, cultivate emotional resonance and social responsibility, and enhance students' humanistic care and social responsibility. Choose textbooks that are in line with the goals of ideological and political education to better meet students' needs for all-round development. Finally, explore the evaluation methods, adopt comprehensive evaluation based on ability, emphasize students' learning reflection and self-evaluation, in order to fully understand students' comprehensive quality and ability. Through the implementation of these measures, it is hoped to cultivate students' critical thinking ability, innovation ability, teamwork ability, practical ability and problem solving ability, so that they can have comprehensive professional knowledge and good ideological and political literacy, and get ready for future development. Zhang et al. applied virtual reality technology to the teaching course of cultural and creative product design, and devoted themselves to developing new possibilities for product design courses [5]. Using virtual reality equipment to create virtual design course environment. Create an immersive design experience. Make up for the shortcomings of traditional curriculum methods, and allow students to appreciate cultural and creative works from a richer and more diversified perspective in a virtual environment, so as to effectively cultivate the core literacy of the discipline. It has become an inevitable trend for virtual reality technology to enter traditional classrooms. Through this study, we hope to find out the problems and summarize the rules, and provide practical experience for the future "Internet +" and "VR +" education.

2. Course Objectives

This course sets the teaching objectives based on the results-oriented education, and divides the teaching objectives into three aspects: knowledge objectives, ability objectives and ideological and political objectives. It not only pays attention to the grasp of students' knowledge points, but also pays attention to the improvement of students' comprehensive application ability of knowledge, problem analysis ability and solution ability. At the same time, it fully considers the integration of the ideological and political characteristics of the course and the e-commerce safety course. In view of the achievement of the goal of the student training program, the design of the knowledge goal and ability goal of the course teaching is carried out, and the design of the teaching content and teaching methods is carried out, in order to achieve the effective support for the goal of talent training.

Course objective 1: To master the basic principles, related technologies and management methods of electronic commerce security

Describe the basic concepts and theories of e-commerce security; Summarize the knowledge of security threats faced by e-commerce; Enumerate the security needs of e-commerce, and be able to list the corresponding technology and management methods according to the security needs; Apply the mind map, summarize, condense and link the teaching content of each chapter, and cultivate the ability of knowledge induction, problem analysis and systematic thinking.

Course objective 2: Have the ability to master the design scheme of e-commerce security and the initial solution of complex management problems

In view of the more complex security problems in e-commerce transactions, put forward solutions, research and analysis; The use of information security technology, Internet security technology, digital certificate, etc., to design the security scheme of e-commerce system; Complete complex encryption design, digital signature design, digital certificate design; Cultivate students' initial ability to solve and manage complex problems, while focusing on the cultivation of students' core values and innovative thinking.

Course objective 3: To have theoretical knowledge to analyze specific safety cases and solve safety problems in practical fields

In view of the specific e-commerce security threats, analyze the existing problems and list the design scheme; Use the Internet and literature retrieval tools to collect relevant literature and compile e-commerce security reports; And explain new concepts, methods and strategies on practical issues of e-commerce security.

Course Objective 4: The ability to work as a team and communicate, and to develop a rigorous learning style

Group cooperation should be timely, quality and quantity; Students should take the initiative to complete the case analysis, complete the report plan design; Write the analysis report and defend it.

Course Objective 5:It has the ideological values of socialism with Chinese characteristics in the new era and the awareness of cyber security.

Complete the risk analysis of typical e-commerce security cases; Have the awareness of network security, enhance the ability to prevent fraud, and strive to practice the concept of national security.

The corresponding relationship between course objectives and graduation requirements:

Table 1. Graduation requirement index point realization matrix

Major Graduation Requirements	Major graduation requirements index points	Course objectives	The weight coefficient for the support of indicator points in this course
1. The basics The degree to which this course supports the student's "basic knowledge" graduation requirement: 0.3	1.1 Have the basic theory and knowledge of economics, management, statistics and computer science required to engage in e-commerce.	Course objective 1: master the knowledge and basic theories of e-commerce security.	0.2
	Knowledge of humanities, social and natural sciences.	Course Objective 3: Have theoretical knowledge to analyze specific safety cases and solve safety problems in practical fields.	0.1
5. Method application The degree of support for students' "application of methods" graduation requirement in this course: 0.3	5.1 Have logical reasoning ability, master qualitative, quantitative analysis and other comprehensive analysis ability.	Course objective 2: Have the ability to master the design scheme of e-commerce system security and the preliminary solution of complex management problems.	0.2
	5.2 Master the relevant technologies and methods of e-commerce, and have basic tools and scientific research methods such as literature retrieval and information query.	Course goal 3: Have theoretical knowledge to analyze specific safety cases and solve safety problems in practical fields.	0.1
8 Work ethic Degree of support for the graduation requirement of "work ethic" : 0.1	8.1 Good political accomplishment and humanities and social science accomplishment.	Course Objective 5:It has the ideological values of socialism with Chinese characteristics in the new era and the awareness of cyber security.	0.1
	Have a high sense of social responsibility, good professional ethics and psychological quality, and have the willingness to serve the community.		
10. Be a team player Degree of support for the graduation requirement of "teamwork" in this course: 0.1	10.1 Define the role of the individual in the team to assist team members in their work.	Course Objective 4: Have the ability to work and communicate in a team and develop a rigorous learning style.	0.1
	10.2 Have certain organizational and management skills and interpersonal skills and the ability to play a role in a team.		

3. Teaching Arrangement

In the teaching process, closely follow the "student-centered" teaching concept, starting from the basic situation of different students in the teaching class, according to the teaching objectives, reasonably set up the teaching process, design the teaching method and arrange the teaching content. The whole teaching process includes six parts: learning knowledge, pre-class test, live class, teaching content review and brainstorming, homework after class and stage examination. To be specific:

First, before the formal teaching, complete the uploading of teaching materials and carry out the pre-school test of students' statistics course.

(1) Upload the teaching materials to the cloud class before class for students to learn independently before class. The materials include syllabus, assessment plan, teaching process, teaching courseware,

teaching materials and supplementary reading materials.

(2) Learning situation understanding stage, through the network questionnaire to understand the actual situation of students' grasp of relevant knowledge, such as whether students' course materials are sufficient, whether they have completed the pre-course, whether they can use the network resources normally and effectively, and the mastery and proficiency of relevant software.

Second, in the formal teaching process, complete the teaching work of e-commerce security theory, knowledge, methods and tools.

(1) Before the formal teaching of each course, the teacher first provides a small number of simple and basic self-test questions through the network platform as a pre-class test, and the students submit them in a short time, so as to realize the understanding of the knowledge points of the students, and also realize the students to check the knowledge points, so as to achieve the targeted development of teaching content and the improvement of teaching effect and listening efficiency.

(2) Design a variety of teaching methods, realize the integration of different knowledge points and appropriate teaching methods, and cross the use of theoretical explanation, case study, group discussion, brainstorming, classroom exercises, teacher-student interaction and other forms, so as to achieve the smooth development of classroom teaching and effective interaction between teachers and students.

Third, after the end of the course, the review and evaluation of the teaching situation and students' learning situation should be completed.

(1) After each course, teachers publish and review homework after class, and carry out self-evaluation of students' mastery of knowledge points.

(2) Stage examinations are conducted regularly. Teachers compare the pre-class test results with those of stage examinations to check the learning effect of students dynamically and give timely guidance.

The specific course arrangement is as follows:

Table 2. Course schedule

Chapters	Teaching content	Schedule of class hours
Chapter 1	Introduction to E-commerce security	6 credit hours
Chapter 2	Information Security Technology	8 class hours
Chapter 3	Internet Security	6 credit hours
Chapter 4	Digital Certificates	4 credit hours
Chapter Five	Public Key Infrastructure PKI	4 Credit hours
Chapter 6	Examples of Security Certification	4 credit hours
Chapter 7	E-commerce security management	4 Credit hours
Chapter 8	E-commerce security risk management	6 credit hours
Chapter 9	E-commerce Security and Integrity	4 Credit hours
Chapter 10	Mind Mapping for e-Commerce Security (Total Review)	2 periods
Total		48 credit hours

4. Problems in Course Teaching and Learning Evaluation

(1) Problems in Course teaching With the popularity of smart phones, it has become more and more convenient to obtain all kinds of information through the Internet, and great changes have taken place in the way students acquire knowledge. A large number of mobile games, various video software and live broadcast software are widely used, making the traditional way of teaching less and

less attractive to students. As a result, a large number of students become phubbers in the class process. A survey showed that 82 percent of students would like teachers to use mobile phones to aid teaching. This requires that we must carry out teaching reform, carry out teaching in a way that is more popular with students and can improve students' learning interest, appropriately integrate mobile phones into teaching, and improve classroom learning efficiency.

(2) Problems existing in students' learning evaluation The traditional way of student evaluation is mainly based on exams, and the evaluation of students' learning process and other abilities is relatively small, which is unfavorable to the class participation of college students and the cultivation of various abilities. In addition, in the traditional student evaluation, students passively accept the teacher's evaluation. This kind of evaluation can not comprehensively evaluate students' learning process and comprehensive ability.

5. Improvement Measures

This course summary should be based on the achievement evaluation, according to the examination results, teacher evaluation, student evaluation, as well as the course teaching situation, examination situation and other comprehensive evaluation. Based on the principle of continuous improvement of evaluation, the teaching design and implementation of the curriculum objectives with low achievement are targeted to improve. At the same time, summarize the achievement of curriculum ideological and political goals and put forward continuous improvement measures.

First, students have a good grasp of the basic knowledge of e-commerce security, but the periodic test and final exam reflect that students still have weak knowledge in encryption technology, digital signature technology, non-repudiation mechanism in PKI, CA certification and other aspects. In the next step, more vivid and vivid teaching means can be adopted to give full play to the advantages of the network, provide more learning resources, such as online courses, learning guidance materials, etc., to help students better understand the relevant content, at the same time, increase the frequency of reviewing relevant knowledge, and disperse relevant knowledge points into pre-class tests and homework to break down one by one.

Second, from the perspective of the degree of achievement of course objectives, although compared with the previous round of teaching, it is still lower than the other four course objectives, indicating that students still have room for improvement in the scheme design of e-commerce security and the preliminary solution of complex management problems. In the future teaching, first of all, we should increase the explanation and discussion of e-commerce security design schemes and give students more case analysis and demonstration; Secondly, provide more practical design schemes and solutions for students to expand after class, so that students can read and analyze more cases to further cultivate their ability to solve and manage complex problems.

Third, on the one hand, due to the weak self-control ability of students in online teaching, students are prone to mind wandering during the teaching process, which affects the learning effect; On the other hand, students do not have a deep understanding of the connotation of basic knowledge, and a high score loss rate occurs when they expand their knowledge. In the next teaching process, it is necessary to deeply explore the connotation and extension of relevant theories, and at the same time, it is not limited to textbook knowledge and classroom knowledge, and make full use of extracurricular learning resources to expand and extend the teaching content, provide more expansion materials for students, and improve knowledge reserves and skills.

Fourthly, there are still some students feedback that it is easy to learn the theory of e-commerce security, but it is difficult to put the theory into practice for actual case analysis. In the next step of teaching, we should continue to increase the content of case discussion, and encourage students to ask questions and question in the course of case analysis in class, so as to timely solve the problems

encountered, clear the learning obstacles, and better understand and apply the theoretical knowledge. After the completion of the case analysis, students are required to reflect and sum up experience, and sort out their own analysis ideas for reference next time. In addition, there were several conflicts in the group cooperation of this course. For example, in the process of e-commerce security risk analysis, different team members had different understanding and identification of risks. In the selection of e-commerce security design and solutions, some small conflicts occurred among individual team members. In the future teaching, it is necessary to design more group cooperation assignments, continue to promote cooperation and communication among groups, and strengthen the cultivation of students' communication and coordination ability.

Fifth, the course aims to establish students' socialist core values, cultivate students' awareness of network security, and practice the concept of national security. In the next step, in the course design, we should continue to strengthen the content of socialist core values, integrate them into the course teaching and discussion of students in a subtle way, so that students can deeply understand the connotation and significance of socialist core values in the process of learning, realize the guidance of ideological and political values, cultivate students' correct values and practice the concept of national security.

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If any, should be placed before the references section without numbering.

Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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