Design and practice of ideological and political teaching of database Principle and Application course

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Abstract. On the basis of analyzing the characteristics of database principle and application course, this paper explores the ideological and political elements of curriculum, introduces the implementation measures of curriculum ideological and political, and discusses how to carry out ideological and political teaching in database principle and application course from the aspects of teaching objectives, teaching content, teaching design, teaching methods and means, and practical teaching. Finally, through the investigation and feedback, the database principle and the implementation effect of the applied curriculum teaching are illustrated.

1 Introduction

In May 2020, the Ministry of Education issued the Guiding Outline for Ideological and Political Construction of Curriculum in Colleges and Universities, which clearly pointed out that comprehensively promoting ideological and political construction of curriculum is a strategic measure to implement the fundamental task of moral education. The world outlook, outlook on life and values of college students are still in the development stage. Ideological and political curriculum is different from ideological and political curriculum, which is not simply teaching ideological and political education, but a kind of educational idea. In the teaching process, what kind of people will be cultivated into the professional knowledge education based on the professional curriculum, analysis of the curriculum content, combined with the characteristics of the curriculum, in-depth mining and refining the ideological value and spiritual connotation contained in the professional knowledge system; Combining teaching objectives and curriculum goal of moral education, in the knowledge into the value guidance, expand the breadth and depth of knowledge of science, to strengthen the education of socialist core values and culture, carry forward the spirit of patriotism and collectivism, cultivate the students' social sense of responsibility and enterprising spirit of innovation, achieve an organic combination of teaching, improve students all-round development[1].

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2 Ideological and political objectives of the course

This course focuses on the educational goal of computer-related majors, combines the characteristics of the course, and pays attention to the unity of knowledge impartation, ability cultivation and value shaping, so as to achieve the following goals in ideological and political education[2].

(1) In combination with the development of data management technology, the use of triggers and other teaching contents, train students to firm up the ideal and belief of socialism with Chinese characteristics, enhance their political awareness and the consciousness of serving the country through science and technology, strengthen their mission responsibility, and firmly realize the confidence of transforming from a scientific and technological country to a scientific and technological innovation country through software technology innovation.

(2) combined with the concept of database structure design, indexing, database creation and management of the teaching content, to cultivate the students' patriotic consciousness and patriotism, guides the student to set up the correct world outlook, the outlook on life, values, the quest for standardization, standardization, strengthening dedicated, dedicated home countries feelings, stimulates the student science and technology of the determination and the social sense of responsibility, To become a responsible database application system development and management talent.

(3) combined with relational database, database needs analysis, data query and so on teaching content, guide students in designing database application system development must be self, more fell more brave, positive enterprising, has the scientific thinking ability, set up rigorous earnest, meticulous work attitude, cultivate students' strict truth-seeking science literacy and the spirit of the best.

(4) the combination of database creation and management, database security, and so on the teaching contents to guide students to set up the fear of the law, advocating the rule of law consciousness, trains the student to the identity of the socialist rule of law with Chinese characteristics and acceptance of the rule of law concept, advocates the spirit of the rule of law and obey IT industry specification under the rule of law, make students obey the rules of the social rules, engineering, and in accordance with the law.

(5) combined with database integrity, SQL Server security configuration and management of teaching content is guides the student to set up the patriotic dedication, honest good good moral character, has the team spirit and team consciousness, trains the student to be practical and realistic attitude, in-depth the actual work methods, enhance the students' consciousness of engineering ethics and sense of responsibility, to be a qualified IT staff.

3 Course content and ideological and political elements

According to the job responsibilities and requirements of database engineers, the basic principles and concepts of database, database design and development, database management, database performance analysis and optimization, database operation and maintenance modules are selected as the main teaching contents. Based on the requirements of database application and management for the development of new engineering and information industry, cutting-edge technologies such as intelligent data processing, data mining and analysis are integrated into the course teaching. Introduce enterprise projects and discipline competitions into the classroom with the help of the enterprise and student innovation team to enrich the project case base; Explore ideological and political elements around the national software industry, and train students' spirit of serving the country with science and technology[3].

(1) Database technology is the core and foundation of information system, and the scale of database construction is an important symbol to measure the informatization degree of a country. In the interpretation of the historical development of database technology, through the interpretation of the current popular database management system, causes the student to understand the development of database technology in our country, such as well-known enterprises, feel China's achievements in the field of database system, emphasis on science and technology is the first productive force, to establish "technology power" thought, strengthen students' sense of national pride and self-confidence, arouse patriotic passion.

(2) In the process of database design, the abstract process of data model from the real world to the machine world should be firstly designed with conceptual structure. The process of abstracting user requirements obtained from demand analysis into information structure (i.e. conceptual model) is conceptual structure design, and the tool to describe the conceptual model is E-R model. The design of conceptual model includes the basic elements of E-R diagram, the design method of E-R diagram, the design steps and design principles of E-R diagram. This part combines the current epidemic situation and uses the health code as an example to cultivate students' sense of social responsibility and legal consciousness. Combined with the health code collapse phenomenon, let the students understand the origin and design process of health code, development team how to carry out technological innovation, overcome difficulties, create miracles, let the students feel the strengthening of national strength, scientific and technological progress, cultivate students' social responsibility and innovation spirit.

(3) The biggest characteristic of the database is that the data can be shared, so the security protection measures of the database system is one of the main technical indicators of the database. With database security as the entry point, the education of professional norms is carried out for students, so that students can understand that software practitioners should abide by professional ethics, and make clear the characteristics and requirements of the computer industry, so as to lay a good foundation for future IT work.

(4) Craftsman spirit is a spirit of preciseness, excellence and innovation, which contains the moral quality, value pursuit, industry goals and fighting spirit of craftsmen. The standardized design of database, the correct SQL query statement of database and the optimization of query efficiency all reflect the meticulous craftsman spirit and the scientific spirit of seeking truth and pragmatism.

(5) When teaching database backup and restoration and database design, use actual engineering project cases to guide students to find problems, independently think and explore, analyze and solve problems with scientific thinking method, encourage students to be bold and innovative in practice, and cultivate students' innovative spirit.

4 Curriculum ideological and political design

(1) Revise the teaching objectives of the course.

In the database principle and application in the process of the implementation of the curriculum education support for course graduation requirements, through the course of moral education aim, and the organic combination of the original teaching, in the newly revised course syllabus adjustment and optimization of curriculum goals, formulate the value shape, ability training and knowledge of the trinity of course objectives. Arouse students' patriotic feelings of being a technology powerhouse, increase their national confidence and pride, deeply understand the professional ethics of IT related industries, and cultivate their devotion to work and teamwork.

(2) Hybrid instructional design

Based on the perspective of database engineer, a project-oriented and task-driven "1234" hybrid teaching mode is constructed. Take database design and development ability

training as a main line; With the help of online and offline classes; According to the three stages of "pre-class cognition, in-class exercise, after-class development"; To achieve "real project research and development, effective classroom feedback, rich second classroom and diversified assessment".

This model insists on student-centered teaching, uses online and offline teaching resources, implements project-based teaching and online and offline mixed teaching, fully interacts with "teaching" and "learning", and completes the teaching loop with feedback.
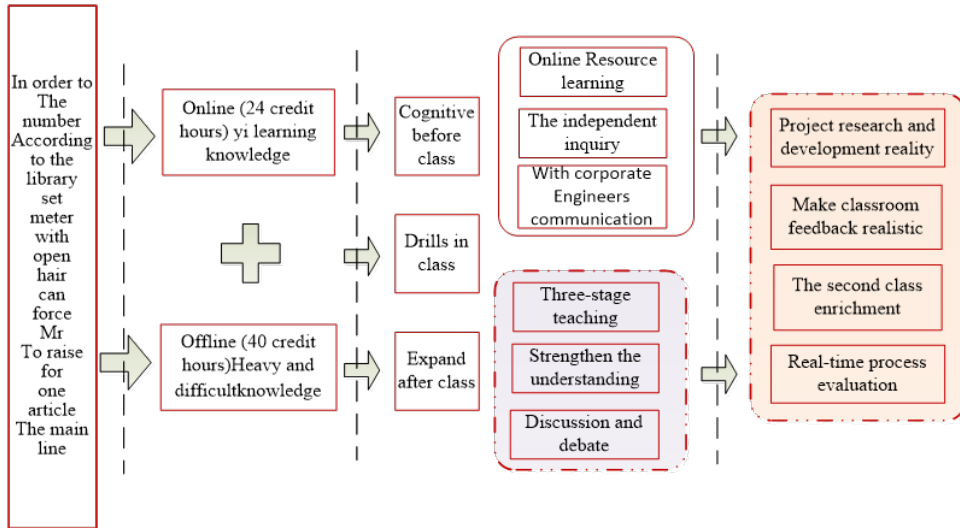

Fig. 1. Project-oriented and task-driven "1234" blended teaching mode.

(3) Teaching methods and means

To cultivate students' database development ability as the main line, to carry out project-based teaching, highlighting students' main role; Make full use of information technology, comprehensively use inquiry teaching method, case teaching method and PBL teaching method, implement five-step project teaching, strengthen the interaction between teachers and students, students and students, and build a teacher-student learning community.

(4) Teaching content and organization and implementation of the course

Theoretical teaching and practical teaching support each other to achieve the unity of "knowledge" and "action". With enterprise database project as the carrier, the course content is sequenced and integrated to reshape the "spiral progressive" content system, forming 5 modules, 13 projects, a total of 64 class hours (24 class hours online; Offline theory 24 hours, practice 16 hours).

Module 1 Development preparation (4 credit hours online; Offline 2 credit hours). Learn basic concepts, development and relational data theory of database, master basic principles of database, cultivate students' feelings of family and country and cultural literacy.

Module 2 Database application system design (online 2 credit hours; Offline 6 credit hours, practice 2 credit hours). Learn the conceptual structure, logical structure and physical structure design of database, master the design process and method of database application system, and train students' professional standards and scientific innovation.

Module 3 Database application system implementation (online 8 credit hours; Offline 6 credit hours, practice 8 credit hours). Learn the creation and information query of database and table, master data query, update and statistical operation, and cultivate students' professional standards and craftsman spirit.

Module 4 Database system optimization programming (online 2 credit hours; Offline 8 credit hours, practice 2 credit hours). Learn T-SQL programming, stored procedure and trigger, master database programming, independently develop database application system, cultivate students' innovative thinking and the spirit of serving the country with science and technology.

Module 5 Database application system management and maintenance (online 8 credit hours; Offline 2 hours, practice 4 hours). Learn database security, backup, recovery and concurrency control, develop students' awareness of national security and law.

The five-step teaching process of "cognition → clarification → implementation → evaluation → expansion" is adopted to control the whole process of fine granularity.

Before class cognition, the enterprise database project was used as the carrier to construct the situation, and the students completed the cognition of the situation online.

In class, the three links of "clarifying, implementing and evaluating" are realized by face-to-face teaching and online teacher-student interaction. The flipped class checks the pre-class effect, students clarify the task content, implement the task in groups, teachers analyze the key and difficult points, and teachers and students evaluate the completion of the group.

After-class development, interaction and communication with enterprise engineers, results inspection; Process control of students' learning after class; Through the second classroom development platform to achieve ability transformation.

5 Course assessment

Construct multiple assessment and evaluation with equal emphasis on knowledge and ability, combination of online and offline, and complementation of process results. Relying on learning, increase the proportion of process assessment to 60%. Online use of online assessment, to achieve the monitoring of students' learning process, including group tasks, project assignments, stage exams, discussion and interaction, curriculum design, etc. Innovate the "class-competition-certificate" assessment, promote learning through competition and certificate, and improve the rate of winning competitions and obtaining vocational certificates[4].

For each project assignment, qualitative evaluation indicators such as scientific literacy, teamwork, value orientation and innovation ability are designed to evaluate students' comprehensive literacy. Reflect the process and results, quantitative and qualitative, individual and team, science and humanities, ability and accomplishment "five combination" assessment concept.

6 Conclusion

As the basic course of computer related specialty, database principle and application course has the characteristics of theory, engineering, systematicness and development, and contains abundant ideological and political elements, which are the theoretical basis for developing curriculum ideological and political. In the course of database theory and the practice teaching process, the integrated use of a variety of teaching methods and teaching methods to guide students in the mastery of professional knowledge and professional skills at the same time, learn more patriotic, dedicated, law-abiding, honest and socialist core

values, the correct outlook on life, values and spirit into his own character, training students' practical and realistic attitude, In-depth practical working methods, enhance students' sense of engineering ethics and responsibility, to become a qualified IT staff.

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