

# Exploration of ideological and political education reform in the course of database principles and applications based on OBE concept

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**Abstract.** Curriculum ideological and political education is an important means to achieve the goal of cultivating morality and nurturing talents. Through the investigation of students' rational identification, emotional cognition, and behavioral tendencies in the early stage of ideological and political education in the course of "Database Principles and Applications", it was found that there are three main problems: weak ideological and political concepts in the course and insufficient value cognition of students; Lack of correlation between curriculum and ideological and political education, and insufficient emotional stimulation of students; The teaching method is single, and the effectiveness of ideological and political education in the curriculum is poor. This article mainly explores the use of OBE education philosophy to enhance teachers' ability to teach ideological and political education through the establishment of curriculum ideological and political concepts; Digging deep into ideological and political elements and reconstructing teaching content; Innovate ideological and political teaching methods and carry out effective teaching; Innovate the evaluation system for ideological and political education in courses, improve the effectiveness of ideological and political education in courses, and achieve educational goals.

## 1 Introduction

Introduction: In May 2020, the Ministry of Education issued a notice on the issuance of the "Guidelines for the Construction of Ideological and Political Education in Higher Education Curriculum" (Jiao Gao [2020] No. 3). The outline clearly states that ideological and political education in university courses should be integrated into classroom teaching construction, as an important part of curriculum design, teaching outline approval, and lesson plan evaluation. It should be implemented in various aspects such as curriculum goal

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design, teaching outline revision, textbook review and selection, and lesson plan and courseware writing, running through classroom teaching, teaching discussions, experimental training, and homework papers. We need to innovate classroom teaching models, promote the application of modern information technology in ideological and political education, stimulate students' interest in learning, and guide them to think deeply

In October 2021, the Ministry of Education issued the Implementation Opinions on Deepening the Construction of Ideological and Political Education in Higher Education Curriculum (Lu Jiao Gao Zi [2021] No. 4). The implementation opinions clearly state that "In response to the goal of ideological and political education in the curriculum, we will deepen the reform of academic evaluation, incorporate students' political thoughts, spiritual literacy, moral sentiments, value judgments, team spirit, etc. into the curriculum assessment, and implement them in classroom tests, homework, mid-term inspections, and final exams. Through case analysis, scenario design, and discussion Q&A, we will design assessment questions reasonably, strengthen professional ethics, social responsibility, and other content assessments."

In this context, many schools have launched professional curriculum ideological and political construction. The Outline proposes to promote the construction of ideological and political education in courses based on the characteristics of the discipline. The courses in science and engineering majors have strong operability, and the teaching of basic knowledge and skills is relatively rigid. There are also significant challenges in exploring and integrating ideological and political elements. The key to promoting the reform of ideological and political education in the "Database Principles and Applications" course is to deeply explore ideological and political elements from the highly specialized knowledge points of the course, find entry points for ideological and political education, and carry out effective ideological and political education in the course.

## **2 Overview of database principles and applications course**

The course "Database Principles and Applications" is a core course in computer related majors, which is a comprehensive and applied course that studies the basic principles of databases, database analysis, design and development, and understands database design methods. Through the study of this course, students will understand the basic concepts of databases, master the basic theories of widely used relational databases, SQL language and application development knowledge, learn the methods of database design, be able to analyze, design, develop and optimize database systems, and use SQL Server to achieve database design, correctly establish, use and maintain databases, Enable students to have the ability to develop and operate complex database application systems, master the standard language SQL for relational databases, master the various functions and usage of the relational database management system SQL Server, cultivate students' ability to solve practical problems, and lay a solid foundation for developing database application systems.

## **3 The problems in ideological and political education in the course of database principles and applications**

The key to the success or failure of the reform of ideological and political education in the course of Database Principles and Applications lies in the students. Ideological and political education should not only emphasize the students' experience, pay attention to their rational identification and emotional cognition of the course's ideological and political education, but also pay attention to the external manifestation of the transformation of their ideological character and professional attitude, that is, the change of behavioral tendencies. Based on

this, the course designed a questionnaire from three dimensions: students' rational identification with the course's ideological and political education, emotional cognition, and behavioral tendencies. A total of 205 questionnaires were distributed, and 205 valid questionnaires were collected, with an effective response rate of 100%. The survey shows that there are still corresponding problems in the ideological and political education of this course.

(1) The ideological and political concepts in the curriculum are weak, and students have insufficient value awareness. In terms of understanding the value of ideological and political education in the curriculum, 85% of students hold a positive attitude towards introducing ideological and political content into the curriculum, and have a high level of understanding of the integration of ideological and political content. However, a small number of students believe that incorporating ideological and political content into the course is "completely unnecessary" and "not very important". The main reason why a small number of students believe that incorporating ideological and political content into the course is "completely unnecessary" and "not very important" is that the ideological and political goals are not clear enough. 94.0% of students reported experiencing ideological and political content in class, but teachers still need to improve their ideological and political teaching content, methods, and abilities. It indicates that the teaching objectives of teachers in actual teaching mainly focus on knowledge, skills, and methods, with less guidance on students' ideological and moral character, political beliefs, etc.

(2) There is a lack of connection between courses and ideological and political education, and less than 8% of students believe that ideological and political content is detached from course knowledge, while 10% of students believe that ideological and political content is outdated and difficult to arouse learning interest; 23% of students believe that the teaching methods used by teachers cannot organically connect ideological and political elements with knowledge points; More than half of the students believe that the ideological and political teaching content and methods selected by teachers need to be improved. Through investigation results and classroom observations, it was found that the integration of knowledge points and ideological and political elements in curriculum teaching is often superficial, and teachers find it difficult to deeply explore explicit and implicit ideological and political elements. The timing of integrating ideological and political education into the teaching process is inappropriate, the methods are rigid, and the effect is poor, making it difficult to stimulate students' learning interest and initiative.

(3) The teaching method is single, and the effectiveness of ideological and political education in the curriculum is poor. At present, the teaching of this course mainly adopts the teaching method of theoretical knowledge and hands-on operation of practical knowledge, which is difficult to stimulate students' subjective initiative and arouse their attention to the ideological and political education of the course. The above results all indicate that in actual teaching, teachers lack in-depth analysis of ideological and political elements of knowledge itself, lack integration methods between ideological and political education and curriculum, and lack collaboration among teachers.

#### **4 The practice path of ideological and political education reform in the course of database principles and applications**

(1) Reconstructing teaching content and exploring ideological and political elements. Based on the requirements of the database engineer position, select the basic principles and concepts of databases, database design and development, database management, database performance analysis and optimization, and database operation and maintenance modules as the main teaching content; Based on the requirements of new engineering and ICT industry development for database design and development, integrate advanced knowledge

such as AI big data processing and analysis into the classroom; Introducing enterprise projects and subject competitions into the classroom, enriching the project case library; Exploring ideological and political elements around "Digital China" to cultivate students' spirit of serving the country through science and technology and being a great country craftsman.

With the goal of cultivating database project development capabilities and using enterprise database projects as carriers, the course content is organized, integrated, and restructured into 5 major modules and 13 projects, totaling 64 class hours (24 online hours; 24 offline theoretical hours, and 16 practical hours).

Combining the development and management of student databases, construct four themes: patriotism, scientific methods, craftsmanship spirit, and engineering ethics. Teach the development history of database technology at home and abroad, cultivate students' patriotism and craftsmanship spirit; Practice database design, implementation, and optimization programming training to cultivate students' scientific methods and professional qualities; Experience the security management and maintenance scenarios of databases, enhance students' awareness of rules and engineering ethics, and achieve a silent effect.

(2) Multidimensional mining of ideological and political education resources, optimizing education supply. In order to achieve the effect of cultivating virtue and educating people, based on the perspective of modern database engineers, the Chinese story in "Data China" is condensed, and four chapters are created: "Founding the Soul with Aspiration", "Craftsmanship towards the Party", "Youth Mission", and "Striving to Fulfill Dreams". A total of 112 ideological and political case libraries are created. In the teaching process, project-based teaching is used to guide students to experience and understand the value leading role of different "data", cultivate the spirit of science and technology serving the country and the craftsmanship of a great nation, and improve their professional qualities.

(3) Enriching methods and means to mobilize endogenous motivation. Taking the cultivation of student database development ability as the main line, carry out project-based teaching, and highlight the role of students as the main body; Make full use of information technology, comprehensively utilize inquiry based teaching methods, case study teaching methods, PBL teaching methods, etc., implement a five step progressive project-based teaching, based on a database security virtual simulation experimental platform, help students improve their engineering application and innovation abilities, strengthen teacher-student interaction, and build a teacher-student learning community.

Based on the teaching philosophy of OBE, while integrating ideological and political education into the curriculum, we rely on projects and work tasks (cases) to complete classroom teaching through lectures, practice, and discussion and debate. We use information technology and flipped classrooms to achieve a blended online and offline teaching.

(4) Innovative teaching mode, integrating ideological and political education throughout the curriculum. Focusing on student development and from the perspective of database engineers, breaking the linear serial relationship of traditional blended learning, efficient resource integration, platform physical integration, and constructing a highly integrated PSCOE nonlinear blended teaching design with enterprise projects as the main thread, including Pre Class, SPOC, Classroom, Outside Class, and Experimental Platform (EP): self-learning, goal guidance, and providing diverse paths, Positioning different student needs and doubts; Research and learning, responding to needs and doubts, through the five step progressive teaching of "guidance analysis exploration discussion evaluation" to enlighten and nourish the mind; Expand learning, consolidate and improve, and innovate technology. Through the realization of project research and development, normalization of ideological and political education, diversification of assessment and evaluation, and

enrichment of the second classroom, we aim to promote the dual improvement of students' database design and development abilities and professional qualities.

The four modules are carried out sequentially, and the enterprise database project is selected as the learning and application goal for students, which runs through the whole teaching process, and the project is implemented in the process of "project initiation and planning → project implementation and control → project closure and acceptance". Each sub-task adopts the teaching process of "exploring → → applying → evaluating → expanding", supplemented by seamless access to ideology and politics.

(5) Multiple assessment and evaluation, dynamic improvement and upgrading. A diversified evaluation system of "standard and non-standard, individual and team, synchronous and asynchronous" was constructed to strengthen the process assessment based on learning data:

Total Score = Online Learning \* 20% + Class Performance \* 15% + Second Class \* 10% + Project Assignment \* 15% + Offline Final Exam \* 40%

Among them, project-based assignments are assessed and evaluated in groups from the perspective of "knowledge mastery, application ability, and emotional attitude" to quantify students' ability to analyze and solve problems, while the second class is evaluated from the dimensions of "discipline competition, innovation, and academic achievements", focusing on the quality and quantity of achievements, and evaluating students' scientific and technological innovation and project practical ability.

(6) Innovate the ideological and political construction mode of the curriculum, and run through the whole system of ideology and politics. Focusing on the all-round development of students, following the laws of education and teaching and students' growth, this course innovates the ideological and political construction mode of the "142" course:

One center: focus on the all-round development of students.

Integration: Construct ideological and political teaching resources with the four themes of "family and country feelings, scientific methods, craftsman spirit, and engineering ethics", and fully integrate them into the whole process of teaching.

Improvement: To achieve the goal of ideological and political construction of the curriculum to improve students' database development ability and professional quality simultaneously.

In the teaching practice, the real scene of enterprise database development is created, and the team of teachers and students plays to build a teaching case resource library with four themes of "family and country feelings, scientific methods, craftsman spirit, and engineering ethics", which is fully integrated into the whole teaching process and realizes the goal of simultaneous improvement of students' professional ability and professional quality.

## 5 Summary

This course is aimed at the weak ideological and political concepts in the course, and the insufficient value cognition of students; Lack of correlation between curriculum and ideological and political education, and insufficient emotional stimulation of students; The problems of single teaching methods and poor effectiveness in ideological and political education in the curriculum require precise grasp of the direction of ideological and political education, scientific design of ideological and political goals, reconstruction of teaching content, exploration of ideological and political elements, multi-dimensional exploration of ideological and political education resources, and optimization of education supply; Adhering to the Student Development Center, with the goal of cultivating students' database development abilities, we have constructed a non-linear "PSCOE" blended teaching approach; Created a teaching environment with "enterprise projects" as the carrier,

and realized the authenticity of project research and development; A ideological and political education system with "Digital China" as the main body has been formed, and ideological and political education has become normalized; We have innovated the "three combinations" evaluation system and diversified the assessment and evaluation. The learning effectiveness, database application system development ability, and comprehensive literacy of students are constantly improving.

2023 Shandong Union College Course Ideological and Political Education Reform Research Project: Ideological and Political Education Reform and Practice of "Database Principles and Applications" Course Based on OBE Concept (2023SZ20); 2022 Shandong Union College Teaching Reform Research Project: Construction and Practice of a Hybrid Teaching Model Based on MOOC+SPOC+Flipped Classroom - Taking "Database Principles and Applications" as an Example (2022XJ08)

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