

The Teaching Reform and Practice of Ideological and Political Construction on the Principles and Applications of Database Course in the Digital Intelligence Era

Youen Zhao

School of Computing and Artificial Intelligence, Shandong University of Finance and Economics,
Jinan 250014, Shandong, China
zhaoyouen@sdufe.edu.cn

Abstract: *As the new orientation, new requirement and new task to develop higher education, it is necessary to deeply implement the digital strategic action, construct a new form of higher education teaching, give full play to the role of the main channel in the classroom education, and comprehensively promote the ideological and political construction of curriculum. This article first explores the ideological and political elements in each chapter of the course 'Principles and Applications of Databases' based on the characteristics of the course, teaching objectives, and teaching content; Then, starting from the background of the digital intelligence age, with the help of MOOC teaching platform, online and offline learning resources are integrated in the teaching process to construct the ideological and political education system of 'Database Principles and Applications'; Finally, the teaching reform and practical experience in ideological and political construction were summarized to promote the balanced development of professional knowledge imparting and student value guidance.*

Keywords: Ideological and Political Construction, Principles and Applications of Database Course, Digital Intelligence Era, Teaching Reform and Practice.

1. Introduction

In 2022, China has fully implemented the digital education strategy and propose the “3C (Connection, Content, Cooperation)” concept [1], which aims to promote digitalization of education nationwide and provide support for higher education. With the advent of the digital intelligence age, higher education is facing higher requirements. When conducting professional education, universities must pay attention to the quality of talent cultivation and actively reform the talent cultivation mode. Comprehensively promoting the construction of ideological and political education in the curriculum is an important measure to implement General Secretary Xi Jinping’s instructions on “cultivating virtue and talent”, and it is also an important task to build a high-quality education system and optimize the positioning of education types [2]. Exploring innovative models for ideological and political education in university courses, promoting the digital transformation and sharing of high-quality resources, opening up new forms of higher education teaching, and implementing digital strategic actions are new positioning, deployment, requirements, and tasks for the development of higher education [3]. Fully utilize the advantages of digitization, integrate online and offline teaching, and construct a multidimensional education model. By utilizing modern information technology and intelligent means such as network resources, we aim to create a broader learning space for students and pave the way for personalized learning that suits them. Promote the synergistic effect of curriculum and professional learning with ideological and political education, making them go hand in hand, enhancing students’ ideological consciousness and moral level, and strengthening their ability to cope with challenges and problems. To meet the requirements of the new era for

students’ hands-on skills and creative thinking. This is a new direction for the curriculum reform.

2. Overall Design of Ideological and Political Construction on the Principles and Applications of Database Course

2.1 Design Concept of Ideological and Political Construction

Based on the students’ learning situation, the curriculum is closely related to life and scientific research. Through the use of intelligent means such as modern information technology, big data software, and network resources, we are committed to cultivating applied scientific research talents, strengthening the construction of the teaching staff, serving modernization construction, updating curriculum content, optimizing teaching design, strengthening practical links, deeply exploring ideological and political education elements, innovating moral education paths, improving teaching effectiveness, and cultivating students’ professional abilities and comprehensive qualities. These are the construction purposes of this course [4].

Utilize internet resources, combine life cases, scientific research practices, etc. to deeply explore the ideological and political elements hidden in the course of Database Principles and Applications [5], prepare ideological and political teaching cases, enhance the guiding role of the main channel of classroom teaching and the ideological and political education, strengthen the education guidance of professional courses, realize the synchronization and parallel of ideological and political education and professional course teaching, the synergy of digital intelligence and ideological

and political classroom, the perfect combination of knowledge teaching and value guidance, and finally form a radiation effect. The overall design concept is shown in Figure 1.

In fig. 1, according to the teaching objectives, we divide the ideological and political design of the database principle and application course into two parts, namely, the ideological and political objectives and the teaching objectives, which are organically integrated. The ideological and political

objectives include the goal of establishing morality and cultivating people, and the teaching objectives include the goal of knowledge and ability. Around these two objectives, we extracted the ideological and political elements of the course of database principle and application, as shown in Table 1. At the same time, based on the idea of digital intelligence design, online learning resources and offline learning resources are designed, which are helpful to the realization of ideological and political goals and teaching goals.

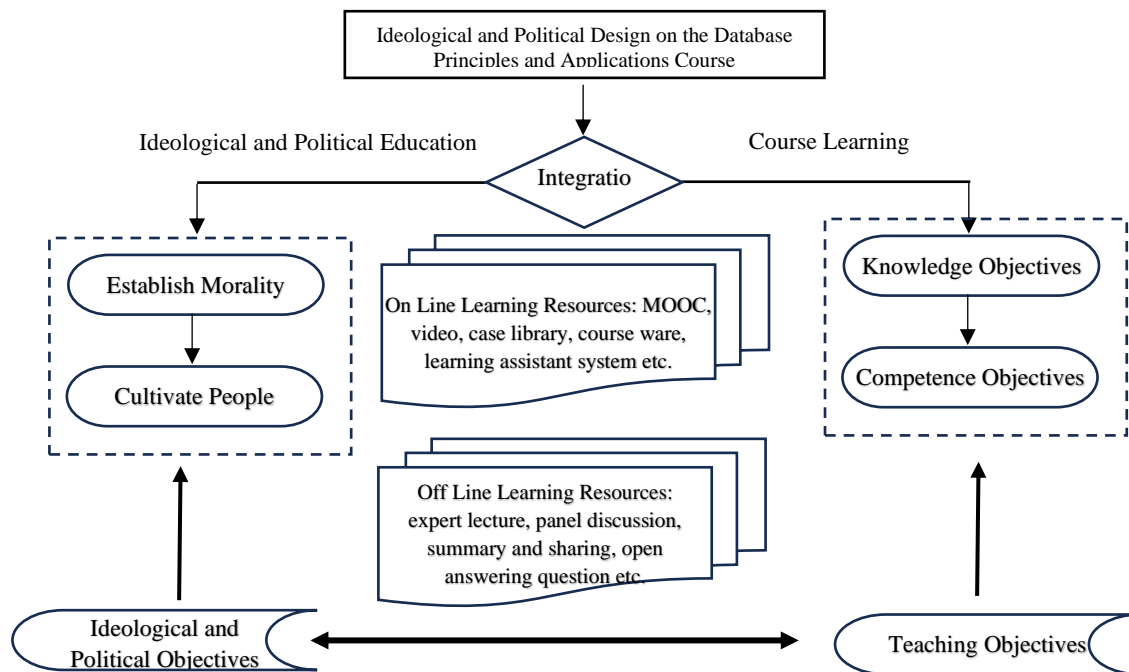


Figure 1: Overall design idea diagram of ideological and political construction on Database Principles and Applications course.

Table 1: Ideological and political elements in Principles and Applications of Database course.

Teaching content	Key points of ideological and political education	Teaching model (method, carrier)	connotation of ideological and political
Common database management systems	By introducing the research status of relational database management systems, the advantages, disadvantages, and application of existing database products in China, students can understand the position and problems in the field of autonomous system software, clarify the responsibilities of each computer engineer, and establish the spirit of scientific research and confidence in developing domestically produced independent software	Teaching method: case study Carrier pathway: network resource	From 'learning knowledge' to 'experiencing history'
Mainstream cloud database products	Comparing the past technological backwardness with its current technological leap, emphasizing that science and technology will always be the primary productive forces, and inspiring students' national pride and confidence	Teaching method: case study Carrier pathway: network resource	From 'learning knowledge' to 'feeling change'
Relational data model	The process of Dr. E. F. Codd proposing the relational model and the questioning and discussion of the relational model in society help students understand the process of professional knowledge generation and establish the correct attitude they should have when facing difficulties in scientific research	Teaching method: discussion Carrier pathway: network resource	From 'learning knowledge' to 'attitude change'
E-R model	Guide students to learn how to abstract and generalize the diverse real world, gradually establish awareness of using natural science knowledge such as mathematics for modeling, and cultivate interest and methods for solving professional problems	Teaching method: Oral teaching Carrier pathway: Offline ppt	From 'learning knowledge' to 'mastering methods' to 'forming consciousness'
SQL programming	Guide students to develop a serious and responsible work attitude, meticulous craftsmanship spirit, and pragmatic scientific spirit in debugging programs and project development	Teaching method: Oral teaching +Experimental case Carrier pathway: development environment	From 'learning knowledge' to 'mastering skills' to 'forming habits'
Database security maintenance	Guide students to understand the importance of data security, cultivate awareness of rights, responsibilities, and discipline, and always put national and ethnic interests first	Teaching method: Oral teaching Carrier pathway: Offline ppt	From 'learning knowledge' to 'forming viewpoints and attitudes'
Database Design	Guide students to develop a people-oriented design concept, a process-oriented design philosophy, a united and collaborative way of getting along, and an ideal sentiment of patriotism and dedication	Teaching method: Oral teaching Carrier pathway: Online video	From 'learning knowledge' to 'mastering methods' to 'forming habits'

2.2 Characteristics of Ideological and Political Construction

In the era of digital intelligence and the background of ideological and political education, the characteristics of ideological and political construction in this course are mainly reflected in the following aspects:

2.2.1 Create a synergistic effect between curriculum ideology and digital intelligence.

In the context of the digital intelligence age, people have access to a wider range of channels for obtaining information, and information resources are showing a trend towards diversification. By utilizing digital technologies such as artificial intelligence and virtual simulation experiments, we aim to improve the traditional teaching methods by addressing issues such as the lack of emphasis on student subjectivity and the uncontrollable learning process. Play some course related videos, pictures, and audio through online platforms to achieve pre class learning, so that students can understand the course content before class. Online classes adopt student participation-based teaching, track students' attendance, and use multiple methods such as case studies and task driven approaches to activate the classroom. Guide students to focus on knowledge points while actively thinking and exploring, and finally write an experimental plan to deepen their understanding and comprehension of professional knowledge.

2.2.2 Emphasize interdisciplinary integration and practical ability cultivation.

Database Principles and Applications is a highly practical course. The construction of ideological and political will focus on cultivating students' comprehensive and practical abilities, in order to solve complex problems. In the curriculum, practical activities such as off campus practice, case analysis, and lectures by engineers or experts have been added to further enhance students' understanding of data acquisition, storage, and processing. Through the teaching of this course, students will further understand data security issues, data management, data processing and analysis techniques, and on this basis, cultivate their 'craftsman spirit', 'security awareness', 'professional ethics', etc.

2.2.3 Multi-dimensional perspectives present cases of ideological and political education in courses.

In the era of digitalization, ideological and political cases in teaching can be integrated with curriculum content from multiple perspectives and levels. The main forms of presentation include: digital teaching resources, virtual experiments and simulation scenarios, paper discussions and flipped classrooms, scientific research innovation projects, social practices, themed lectures, etc. In the teaching process, strengthen the infiltration of data security awareness, pay attention to professional ethics, social responsibility, and patriotism, attach importance to scientific research, and

cultivate innovative consciousness. Improve students' comprehensive qualities to adapt to social needs.

2.2.4 Utilize online platforms to improve assessment mechanisms.

In traditional teaching, students' academic performance is calculated by the teacher converting their exam scores into their regular grades. In the context of the digital age, teachers can use online platforms to establish a curriculum ideological and political assessment mechanism, conduct regular assessments of students, and comprehensively understand their learning and ideological status. Meanwhile, in the teaching process, teachers can also combine the content related to the curriculum ideology with the objectives of the curriculum ideology. During the learning process, students can check the progress and video resources of the course's ideological and political content at any time. Finally, a combination of online and offline methods will be used to assess students.

3. Exploration and Practice

Taking the era of digital intelligence and ideological and political education as the background, leading and driving the quality and innovative development of higher education, creating a new form of higher education, taking the ideological and political classroom of professional courses as the carrier, integrating knowledge and practice, building the education system of ideological and political courses of 'Database Principles and Applications', promoting the equal emphasis on the transfer of professional knowledge and the guidance of students' value, and drawing a new blueprint for cultivating morality and cultivating people in the new era is the new era.

3.1 Building a New Three-stage Teaching Model with the Advantage of Digital Intelligence

Digitalization and intelligence make online and offline teaching more convenient, and at the same time make teaching methods more diversified and innovative. For this reason, we have created a three-stage cross teaching process model that includes before class stage, in class stage and after class stage, as shown in Figure 2. In before class stage, the teacher is the designer of the teaching process, and the student's task is to preview. In the middle of the class, the teacher is the organizer of teaching and the student's task is to participate. In the after class stage, the teacher is the instructor of teaching and the student's task is to review.

The three-stage cross teaching model can give play to the leading role of teachers, the dominant position of students, grasp the main position of moral education classroom, diversify teaching methods, activate the classroom, carry out three-stage teaching, and create a new form of teaching in the era of digital intelligence [6].

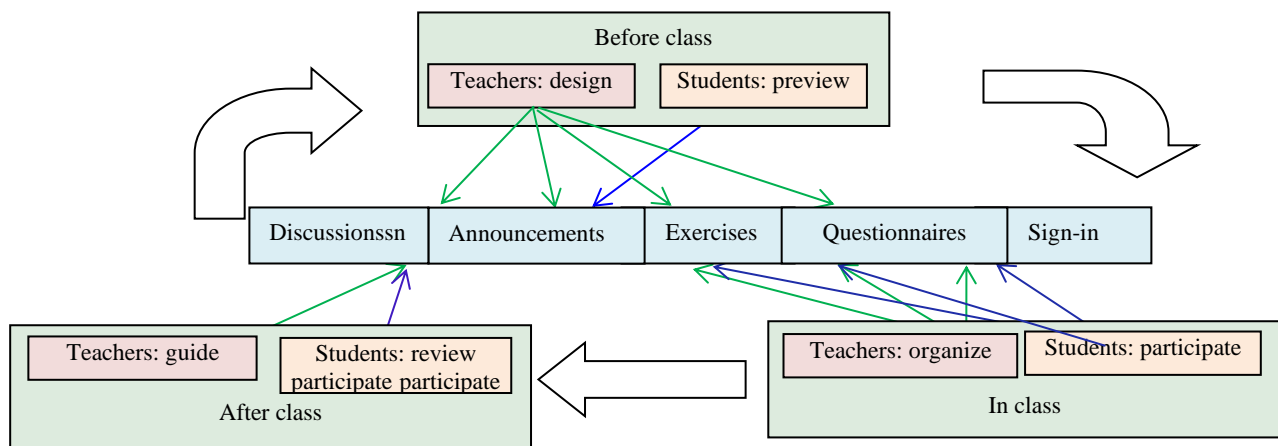


Figure 2: A three-stage cross teaching process design

3.2 Integrate the Teaching Content ‘Gene Implantation’ with Ideological and Political Elements

From the perspectives of majors, industries, history, national culture and international scientific and technological development related to the curriculum, online resources such as network platforms and network libraries are used to collect ideological and political resources and materials that match professional knowledge points, and cultivate students’ professional identity, national pride, social responsibility, family and country feelings, scientific research and dedication, etc. [7], increase the knowledge of the course, humanistic, leading, times and innovative, to achieve such as salinization of water, flavor and fresh teaching effect. The design of teaching content follows the 3 principles: 1) ensure that the content of education conforms to the training purpose of the course, reflects the professional development trend of the discipline, and takes into account the depth and breadth of teaching to a certain extent; 2) the key points of knowledge are clear, the difficulties are emphasized, and the organization is clear and clear, which helps to build a complete conceptual framework; 3) emphasize the value of moral education of the curriculum.

3.3 Combing the Ideological and Political Elements, Revising the Syllabus and Lesson Plans

Analyze the requirements of the curriculum for the dimensions of knowledge, ability, emotion and other disciplines, integrate the moral education objectives into the traditional teaching objectives, sort out the ideological and political elements that can be integrated into each professional knowledge module through curriculum discussion and outline revision, use the Internet to search and dig deeply into the ideological and political education resources contained in the curriculum, naturally integrate with professional knowledge in content, and focus on strengthening students’ professional ethics, data security and social responsibility awareness, cultivate students’ good autonomous learning ability, and have the outstanding scientific literacy of working together, seeking truth from facts, having the courage to explore and innovate [8]. Revise the lesson plan, clarify what teachers want to teach and what students want to learn, analyze whether the teaching content meets the needs of students and society, whether it fits the syllabus, whether it can support graduation, and whether it can achieve the goal of teaching moral education.

4. Conclusions

Based on the background of digital intelligence era, this article elaborates on the teaching reform and practice of ideological and political construction in the course of “Database Principles and Applications”. Firstly, based on the characteristics of the course, teaching objectives, and teaching content, we deeply explored the ideological and political elements in each chapter of the course ‘Principles and Applications of Databases’, promoted classroom teaching reform, optimized course settings, improved teaching design, promoted the digitization and sharing of high-quality resources, and enabled teachers to better play the role of ideological and political education.

Then, starting from the background of the digital intelligence age, with the help of MOOC teaching platform, online and offline learning resources are integrated in the teaching process to construct the ideological and political education system of ‘Database Principles and Applications’, enhance students’ national pride and responsibility, and cultivate their ability to solve problems and innovate. This course truly achieves the integration of ideological and political education with knowledge system education in ideological and political construction.

References

- [1] HUAI J P. Digital change and the future of education: The keynote speech at the World Digital Education Conference 2023 [EB/OL]. <https://dxs.moe.gov.cn/zx/a/jj/230215/1828118.shtml>
- [2] XI J P. At the national conference on ideological and political work in colleges and universities, I stressed: Through the ideological and political work throughout the whole process of education teaching, create a new situation of higher education development in our country. *People’s Daily*, 2016-12-09(1).
- [3] The Department of Higher Education, the Ministry of Education. Notice on the issuance of the Key Work Points of the Department of Higher Education of the Ministry of Education in 2023 [EB/OL]. http://www.moe.gov.cn/s78/A08/tongzhi/202303/t20230329_1053339.html?eqid=c65b7c150001141a00000066426aa9f&wd=&eqid=ead73c2a0000868b0000000464547a99.

- [4] Notice of the Ministry of Education and other ten departments on the issuance of the Work Plan for Comprehensively Promoting the Construction of “Great Ideological and Political Courses”: Jiao She Ke [2022] No. 3 [EB/OL]. (2022-07-25) https://www.gov.cn/zhengce/zhengceku/2022-08/24/content_5706623.htm.
- [5] Yan R. Exploration of Ideological and Political Education in Database Courses under the Background of Blended Education. *Computer Education*. 2023(6): 17-22. DOI: 10.3969/j.issn.1672-5913.2023.06.004.
- [6] Changqing Kang, Zhongbo Wu, Lijuan Zhu, etc. BOPPPS Classroom Teaching Design Integrated into Curriculum Ideological and Political Education -- Taking Database System Course as an Example. *Computer Knowledge and Technology (Academic Exchange)*, 2023, 19(10):139-141.
- [7] Qian He, Bingjie Liao, Kuangyu Tan etc. Ideological and Political Construction and Practice of Computer Network Course Based on Integration of Production and Education. *Computer Education*, 2024(3):111-114.
- [8] Linge N, Parsons D. Problem-Based Learning as an Effective Tool for Teaching Computer Network Design. *IEEE Transactions on Education*, 2006, 49(1): 5-10. DOI:10.1109/TE.2005.852600.