

Practice and Exploration of Ideological and Political Education in "Web Programming and Application" Course Based on School-enterprise Cooperation

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ABSTRACT

This study focuses on the "Web Programming and Applications" course, aiming to explore the construction and practical approaches of ideological and political education through school-enterprise collaboration. By analyzing the course's characteristics and educational objectives, we comprehensively identified ideological elements embedded in the curriculum, clarifying their origins and integration points for patriotism, craftsmanship spirit, professional ethics, and other ideological components. Under the school-enterprise collaboration framework, we established a comprehensive teaching system for ideological education that covers instructional objectives, syllabi, content planning, and module design. Innovative teaching methods such as case-based instruction and project-driven learning were adopted, complemented by modern information technology to enhance teaching effectiveness. Practical teaching was implemented by introducing real-world enterprise projects, organizing student participation in internships, practical training, and competitions to boost hands-on skills and innovation capabilities. An evaluation system encompassing knowledge mastery, skill enhancement, value shaping, and professional competence development was constructed, with data collected through questionnaires, student interviews, teacher evaluations, and corporate feedback. The assessment results indicate initial success in value shaping and skill improvement, but gaps remain in understanding cutting-edge knowledge and adherence to professional ethics. Future efforts should deepen school-enterprise cooperation, expand integration approaches for ideological elements, continuously optimize teaching systems and evaluation mechanisms, to cultivate high-quality web programming and application professionals.

KEYWORDS

Web programming and application; School-enterprise cooperation; Curriculum ideology; Practice path; Effect evaluation

1 Introduction

In the current wave of higher education reform, integrating ideological and political education into curricula has become a crucial measure to fully implement the fundamental task of cultivating virtue and nurturing talents. With rapid socioeconomic development and technological advancements, the demand for high-quality, well-rounded professionals is becoming increasingly urgent. While delivering professional knowledge and skills, university courses must also shoulder the responsibility of value guidance and ideological-political education.

As a core course for computer science, technology, and software engineering majors, Web Programming and Application holds pivotal importance in the internet industry. The program not only requires students to master professional skills in HTML, CSS, JavaScript, and other technologies, but also cultivates strong coding capabilities and innovative design thinking. It further develops aesthetic sensibilities, teamwork spirit, and practical problem-solving abilities. In this age of information overload, web applications spread widely, and the values and cultural significance embedded within them subtly influence users across the board.

As a talent development model that closely integrates school education with corporate needs, school-enterprise collaboration provides unique advantages for implementing ideological and political education in the "Web Programming and Application" course. Enterprises, as frontline industry players, possess abundant practical projects, advanced technologies, and excellent corporate culture. However, some teachers lack a profound understanding of curriculum-based ideological education and effective methods to integrate political elements into professional teaching. The course content still focuses primarily on imparting professional knowledge and skills, with insufficient exploration and systematic integration of ideological elements. The role of school-enterprise collaboration in curriculum-based ideological education remains underutilized, as enterprises show low enthusiasm for participating in such initiatives and lack effective cooperation mechanisms and safeguard measures.

2 Overview of theories related to school-enterprise cooperation and curriculum ideology

In the context of ongoing reforms in higher education, school-enterprise collaboration and curriculum-based ideological education – two pivotal educational philosophies and practical models – play a crucial role in cultivating well-rounded, high-quality talents. A thorough understanding of their theoretical foundations serves as the cornerstone for exploring their integrated implementation.

2.1 The connotation and mode of school-enterprise cooperation

School-enterprise cooperation refers to a collaborative educational model between schools and enterprises, aiming to integrate resources from both parties, achieve complementary strengths, and jointly cultivate professionals meeting societal demands. In essence, this collaboration goes beyond merely sending students for internships or employment; it involves in-depth cooperation across multiple dimensions including curriculum design, course development, teaching implementation, and faculty training. The primary forms of such partnerships are diverse, encompassing customized training programs, co-established internship bases, and industry-academia-research collaboration projects^[1].

Under the customized training model, universities develop specialized talent development programs aligned with corporate needs, while enterprises actively participate in the teaching process. Graduates are immediately placed in partner companies, creating a targeted approach that significantly enhances employability. Jointly established internship bases provide authentic work environments where students hone professional skills through hands-on experience, while companies can identify top talents from these students^[2]. Industry-academia-research collaboration projects facilitate the transformation of academic achievements into practical applications. Enterprises supply research funding and practical platforms, while universities help solve technical challenges for businesses, achieving mutual benefits. These diverse cooperation models each demonstrate unique strengths and complement each other, collectively driving the close integration of higher education with corporate development^[3].

2.2 Definition and goal of curriculum politics

Course-based ideological and political education (CBIE) is an educational philosophy that integrates political education into professional course instruction. It breaks the traditional disconnect between ideological-political theory courses and specialized subjects, emphasizing coordinated development between all courses and theoretical education to create synergistic effects. The essence of CBIE lies in uncovering ideological-political elements within academic content while teaching professional knowledge and skills. This approach effectively imparts correct values, ethical standards, and social responsibility to students, achieving an organic integration of knowledge transmission, skill development, and value guidance^[4].

2.3 The integration point of school-enterprise cooperation and curriculum ideology

There are numerous convergence points between school-enterprise collaboration and ideological education in curriculum, with both mutually reinforcing and complementary. School-enterprise cooperation provides a rich practical platform and resources for ideological education in curriculum. Real-world projects from enterprises serve as vivid materials for ideological education in curriculum. Through participating in corporate projects, students can personally experience corporate culture, values, and professional ethos^[5].

3 Exploration of ideological and political elements in web Programming and Application course

In the context of higher education emphasizing ideological and political education in curriculum design, the "Web Programming and Application" course stands out as a crucial subject for computer-related majors, possessing distinctive disciplinary characteristics and educational potential. Thoroughly exploring the ideological elements embedded in this course is vital for achieving an organic integration of professional knowledge transmission and ideological-political education.

3.1 Features and educational requirements of web Programming and Application course

The course "Web Programming and Applications" features a unique knowledge framework, skill requirements, and distinctive teaching approach. Structurally, it covers fundamental programming languages like HTML, CSS, and JavaScript, along with advanced topics such as front-end frameworks and responsive design – a field that evolves rapidly with continuous updates. In terms of skill development, students are expected to master code writing, page layout design, interactive interface design, and problem-solving capabilities. The curriculum emphasizes hands-on practice through extensive project-based learning, effectively reinforcing theoretical knowledge while cultivating real-world application skills.

The curriculum is designed with clear educational objectives. To foster innovation, students are encouraged to apply their knowledge to create unique and innovative web pages and interactive interfaces that cater to diverse user needs. Another key focus is developing aesthetic literacy, requiring students to master principles of color coordination and layout design, ensuring their creations possess both visual appeal and artistic impact.

3.2 The classification and source of ideological elements

Ideological elements can be categorized into multiple types, such as patriotism, craftsmanship spirit, professional ethics, and innovative awareness. The patriotic element can inspire students' national pride and sense of responsibility, encouraging them to inherit and promote excellent Chinese culture in their designs. The craftsmanship spirit emphasizes dedication, perseverance, and a pursuit of excellence in work attitude, which is crucial for improving students' code quality and design proficiency. Professional ethics elements guide students to establish correct career values, adhere to industry standards, and protect user privacy and data security. Innovative awareness encourages students to boldly explore and experiment, driving the development of web programming and application industries.

The sources of ideological elements are extensive. From an industry perspective, the rapid development and technological innovation in web programming and application sectors exemplify the power of scientific progress and innovative spirit, providing abundant material for cultivating students' innovative awareness. In corporate cases, many outstanding internet companies have demonstrated team collaboration and social responsibility during their growth, serving as vivid examples for professional ethics and teamwork education.

3.3 The specific content of ideological and political elements in the course of Web Programming and Application

By integrating the curriculum of "Web Programming and Applications", we can systematically explore ideological-political elements that can be incorporated into teaching. For instance, when teaching HTML tags, educators could introduce China's internet development history and achievements to cultivate students' patriotic spirit. In CSS styling design, we should emphasize craftsmanship principles, requiring students to focus on details while pursuing code simplicity and aesthetic appeal. Regarding JavaScript programming, we encourage students to unleash their innovative thinking by exploring diverse algorithms and solutions.

4 Ideological and political practice of "Web Programming and Application" course based on school-enterprise cooperation

With the deepening of educational reforms, integrating ideological and political education into the "Web Programming and Application" course has become an inevitable trend. School-enterprise collaboration provides robust support and broad prospects for this initiative. This paper elaborates on the implementation of ideological and political education in the "Web Programming and Application" course through school-enterprise cooperation, focusing on four key aspects: constructing a teaching system, innovating teaching methods and tools, integrating practical teaching with corporate projects, and building faculty teams.

4.1 Construction of curriculum ideological and political teaching system based on school-enterprise cooperation

In the context of school-enterprise collaboration, the first priority is to meticulously design the teaching objectives and syllabus for ideological and political education. The teaching objectives should closely align with the professional knowledge and skills cultivation in "Web Programming and Applications", while emphasizing the development of students' ideological and political literacy—such as establishing correct values, possessing good professional ethics, and social responsibility. The syllabus must clearly define the key points and requirements of ideological and political education at each instructional stage, ensuring that these elements are appropriately distributed throughout the curriculum system.

In designing the curriculum for ideological and political education, theoretical instruction should thoroughly explore the embedded values in the "Web Programming and Applications" course, integrating patriotism, craftsmanship spirit, and innovative thinking into technical explanations. Practical components could incorporate project-based tasks with educational significance, allowing students to experience these principles through hands-on practice. The evaluation system should not only assess professional skill mastery but also evaluate ideological performance, including teamwork capabilities, innovative thinking, and professional ethics, to holistically assess students' comprehensive qualities.

4.2 Innovation of teaching methods and means

To better achieve the goals of ideological and political education in courses, appropriate teaching methods should be adopted. The case study method proves effective by selecting representative corporate cases to guide students in

analyzing ideological elements such as innovation spirit and social responsibility demonstrated during project development. Project-driven instruction uses real-world projects as learning vehicles, enabling students to develop teamwork skills and problem-solving abilities while understanding the importance of professional ethics. Group discussion sessions encourage active student interaction, allowing them to share perspectives and ideas while cultivating critical thinking and communication skills.

The application of modern information technology can significantly enhance the effectiveness of ideological and political education in courses. Through online teaching platforms, educators can upload diverse resources including educational videos and case study materials, facilitating self-directed learning. Virtual simulation experiments provide students with realistic practice environments, allowing them to experience authentic work scenarios through simulated projects, thereby deepening their understanding and appreciation of ideological and political elements.

4.3 Integration of practical teaching and enterprise projects

Introducing real-world enterprise projects as practical teaching content represents a crucial initiative in ideological and political education through school-enterprise collaboration. These authentic and challenging projects allow students to gain hands-on experience in professional ethics and social responsibility. During project implementation, students must strictly adhere to project specifications and timelines while paying attention to details and quality control, thereby cultivating rigorous work attitudes and craftsmanship spirit. Simultaneously, they should consider the impact of projects on users and society, fostering correct values and social responsibility awareness.

Organizing students to participate in corporate internships, practical training programs, and competition activities can significantly enhance their practical skills and innovative capabilities.

Through these internships, students immerse themselves in real-world corporate environments, gaining insights into industry trends and technological advancements while learning advanced management practices and team collaboration models. Competition events provide a platform for students to showcase their talents, challenge themselves, and ignite their innovative thinking and competitive spirit.

4.4 Teacher training

The faculty team is the cornerstone of ideological and political education in courses. Enhancing teachers' ideological education and professional training can boost their awareness and teaching capabilities in curriculum-based ideological education.

Schools should organize ideological education training programs for faculty members to learn the latest educational concepts and methods, guiding them to naturally integrate ideological elements into professional instruction. Additionally, encouraging teachers to engage in industry internships helps them understand evolving demands and real-world corporate contexts, thereby enriching course content.

Establish a school-enterprise faculty collaboration mechanism by inviting industry experts to participate in ideological and political education courses and provide guidance. These professionals, equipped with rich practical experience and industry insights, can deliver authentic corporate case studies and cutting-edge industry knowledge to students while sharing their professional values and ethical principles cultivated throughout their careers.

5 Evaluation of ideological and political practice effect of "Web Programming and Application" course based on school-enterprise cooperation

In order to test the effectiveness of the ideological and political practice of the course "Web Programming and Application" based on school-enterprise cooperation, it is necessary to establish a scientific and reasonable evaluation system, adopt effective evaluation methods to collect data, and conduct in-depth analysis and feedback on the results, so as to continuously optimize the ideological and political teaching of the course.

5.1 Construction of evaluation index system

The evaluation index system is constructed from the aspects of students' knowledge mastery, skill improvement, value shaping and professional quality cultivation. All indicators are refined and corresponding weights and evaluation criteria are determined, as shown in Table 1:

Table 1 Evaluation indicators, weights and standards of ideological and political education for the course "Web Programming and Application"

First-level indicators	Secondary indicators	weight	Evaluation criteria
mastery of knowledge	Understanding of expertise	0.2	Can accurately understand the basic concepts, principles and technologies of web programming and application. The correct rate of answers to relevant knowledge points in exams or assignments is above 80% as excellent, 60%-80% as good, and below 60% as to be improved
	Cutting-edge knowledge	0.1	Be able to pay attention to the latest developments in web programming and application industry, and be able to say at least 3 new technologies or trends in the industry as excellent, 1-2 as good, and 0 as to be improved
Skill enhancement	Code writing ability	0.2	The code is standard and efficient, and can independently complete the complex Web front-end project. The code error rate below 5% is excellent, 5%-10% is good, and more than 10% is to be improved
	Project practice ability	0.2	In the project practice, I can effectively use the knowledge and skills learned, rationally divide and cooperate, and complete the project on time with high quality as excellent, basically complete the project but with some defects as good, and fail to complete the project as to be improved
Shaping values	Patriotic feelings	0.1	It can reflect the inheritance and promotion of excellent Chinese culture in the design, and show positive patriotic feelings in related thematic discussions or works as excellent, with certain manifestations as good, and not obvious as to be improved
	consciousness of innovation	0.1	In the project design, novel ideas and solutions can be put forward. At least two innovative points are excellent, one is good, and no innovative points are to be improved
Professional quality cultivation	Team work spirit	0.1	In team projects, I actively communicate and support each other, and can give full play to my own advantages. The team evaluation is excellent for outstanding performance, good for average performance, and needs improvement for collaboration problems
	[经] professional ethics	0.1	Good performance in compliance with industry norms and professional ethics, protection of user privacy and code quality in projects are excellent, good performance is basically compliant, and violations are to be improved

5.2 Assessment methods and data collection

A variety of evaluation methods such as questionnaire survey, student interview, teacher evaluation and enterprise feedback were adopted. Relevant data and information were collected before and after the practice of ideological and political courses.

Questionnaire survey: Design questionnaires covering knowledge mastery, skill improvement, value shaping and professional quality cultivation. Questionnaires were distributed before the course to understand students' initial status, and distributed again after the course to compare students' changes. 200 questionnaires were distributed before and after the practice, with effective recovery rates of 90% and 92% respectively.

Student interview: Randomly select students with different learning levels and personality characteristics for interviews. Interview 20 students before the course to understand their expectations for ideological and political education in the course and their basic conditions; interview 25 students after the course to understand their gains and experience in the course.

Teacher evaluation: Teachers make comprehensive evaluation according to students' performance in class, homework completion, project practice and other aspects. Teachers score each student's indicators with a full score of 100 points.

5.3 Analysis and feedback of evaluation results

Statistical analysis was conducted on the collected evaluation data. For instance, questionnaire survey results indicate that after participating in the ideological and political education practice courses, students' self-assessment scores for innovation awareness increased by an average of 15%, while their ratings for teamwork spirit improved by 12%. Teacher evaluations and corporate feedback reveal that most students demonstrated significant progress in professional skills and occupational competence, though challenges remain in understanding cutting-edge knowledge and adhering to professional ethics.

The practice of integrating ideological and political education into curriculum has demonstrated notable achievements, particularly in shaping students' values and enhancing their professional competencies. However, challenges have been identified, including insufficient engagement with cutting-edge knowledge among some students and the need for strengthened ethics education.

6 Conclusion

This study systematically analyzes the development and implementation of ideological education in curriculum through school-enterprise collaboration, focusing on the "Web Programming and Applications" course. The research demonstrates significant achievements in identifying ideological education elements, clarifying educational objectives, categorizing ideological elements, and exploring their sources from multiple perspectives. By integrating these elements into course chapters and knowledge points, the study validates the feasibility of school-enterprise collaborative ideological education practices. The established teaching framework proves effective, with diverse instructional methods and corporate project integration fostering deep integration between professional training and ideological education. The evaluation system provides comprehensive metrics for assessing implementation outcomes, employing multiple data collection methods to reflect both successes and shortcomings, thereby offering support for pedagogical adjustments.

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