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Exploring the Integration Framework of Curriculum-Based Political Education into "Information System Analysis and Design": A Value-Guided Perspective

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Abstract

In the context of the national curriculum-based political education reform, this study examines the significant challenges encountered in the course "Information System Analysis and Design", specifically the ambiguity in integration pathways and the lack of a systematic evaluation framework. To address these issues, a novel educational model termed "Value-Competence Dual-Drive" is developed. This research employs case-based teaching as the primary methodology to effectively incorporate core ideological and political elements, such as strategic thinking and a spirit of craftsmanship, throughout the entire lifecycle of system development. As a result, it facilitates the simultaneous development of both professional competencies and moral values. Additionally, a closed-loop evaluation system that integrates process-oriented assessments with ethical compliance metrics is established to measure the effectiveness of political education, thereby creating a comprehensive educational feedback loop. This study offers a quantifiable and scalable framework for the political development of engineering courses, promotes the cultivation of interdisciplinary talent, and provides substantial theoretical and practical support for the implementation of moral integrity in education.

Keywords

Curriculum-based political education, information system analysis and design, value guidance, closed-loop evaluation system.

1. Introduction

Guided by the overarching goal of fostering virtue through education in higher education, curriculum-based ideological and political education reflects the educational capabilities of teachers in their course design and teaching practices [1-2]. As a core compulsory course for the Information Management and Information Systems major, "Information System Analysis and Design" plays a vital role in developing interdisciplinary talents who possess both robust technical skills and a strong sense of values and responsibility. Although existing curriculum-based ideological and political education has established theoretical frameworks and accumulated practical experiences, courses that emphasize engineering practicality and rapid technological advancement continue to encounter adaptive challenges. These challenges include unclear pathways for integrating ideological and political elements with disciplinary competencies, insufficient evaluation mechanisms, and delayed responses to emerging issues in technological ethics[3].

Systematic research on ideological and political education in the "Information System Analysis and Design" course is lacking. Current studies lack a comprehensive framework for integrating ideological and political education and fail to delve into the internal logic, long-term mechanism, and evaluation system of this integration [4-7]. This paper focuses on the "Information System

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Analysis and Design" course, employing the system development lifecycle (SDLC) theory with its five key stages: system planning, system analysis, system design, system implementation, and system operation and maintenance. It examines the internal logic and implementation challenges related to mining ideological and political elements, establishing integration pathways, and optimizing evaluation mechanisms. By infusing patriotic ideals, craftsmanship spirit, and innovative thinking into the system development process, this study aims to offer theoretical insights and practical guidance for developing a distinctive "value-competence" dual-drive educational model tailored to engineering disciplines.

2. Model Construction

Based on systems theory and collaborative governance theory, this paper develops a "value-capability" dual-wheel drive model depicted in Figure 1. The model's fundamental concept aligns the five stages of the information system development life cycle on the horizontal axis with "value guidance, capability-driven, and closed-loop evaluation" on the vertical axis, establishing a dynamic coupling mechanism.

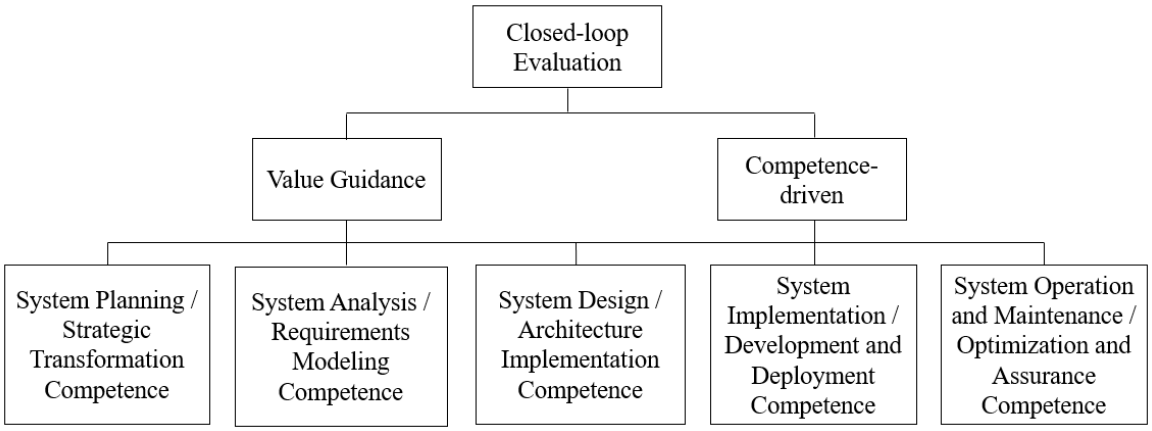

Figure 1: The "value-capability" dual-wheel drive model framework

The value guidance framework encompasses five dimensions: patriotism, engineering ethics, innovative spirit, collaborative awareness, and legal concepts. Each phase of the system development life cycle dynamically prioritizes different aspects. For example, the system planning phase emphasizes strategic thinking, while the system design phase focuses on safety ethics. The capability-driven wheel aligns with professional competencies in system development, incorporating skills such as requirement modeling, architecture design, and coding implementation, which correspond directly to the value dimensions. For instance, the "data security design capability" aligns with "legal concepts". As a dual-wheel meshing mechanism, the closed-loop evaluation hub continuously enhances value cultivation and capability training through the collection of process data and subsequent feedback.

3. Mining and Integration Path of Ideological and Political Elements

3.1. System Planning Stage

This stage emphasizes the transformation of strategic goals, the multi-dimensional integration of demands, and the verification of feasibility. Utilizing core tools such as the Strategy Set Transformation (SST) method and Business System Planning (BSP), it establishes an organic connection among enterprise strategy, business requirements, and technological implementation. Guided by the central focus of "value guidance + competence cultivation", the course design at this stage intricately incorporates ideological and political elements—including strategic thinking, systematic concepts, innovative awareness, and social

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responsibility—into knowledge application scenarios. Through meticulous teaching design, it fosters the coordinated enhancement of professional competence and value concepts, thereby laying a robust foundation for the comprehensive integration of ideological and political education into the curriculum.

3.1.1. Scenario-based Design of Strategic Thinking and Collaborative Capabilities

This study employs the Strategy Set Transformation (SST) method and the Business System Planning (BSP) method as foundational frameworks to design an integrated teaching pathway comprising "case analysis—scenario simulation—value immersion" .The selection of cases focuses on typical digital transformation examples from traditional enterprises, particularly offline retail businesses that are expanding their online operations. These cases serve to guide students in identifying information system objectives, such as optimizing the shopping process and integrating cross-channel services, derived from the strategic goals of market expansion and brand enhancement. By analyzing both successful and unsuccessful strategy transformation cases across various industries, the study fosters students' strategic thinking and goal-oriented awareness through the application of knowledge.

In the design of scenarios, a collaborative framework involving multiple departments within a multinational manufacturing enterprise is established. This framework simulates requirement conflicts among the production department (focused on equipment monitoring), the sales department (dedicated to customer data analysis), and the finance department (concerned with cost control). Students are instructed to utilize system dynamics modeling and Pareto improvement mechanisms to reconcile these competing requirements, ultimately developing planning solutions that harmonize local demands with overarching strategic objectives. The principles of "collective interest first and collaborative win-win" are incorporated into the instructional process, allowing students to grasp the dialectical relationship between individual components and the whole. This approach fosters enhanced systematic thinking and collaborative decision-making skills.

3.1.2. Immersive Design of Innovation Ethics and Social Responsibility

A teaching closed loop of "data empowerment—innovation practice—responsibility immersion" is constructed based on the Critical Success Factors (CSF) method, Value Chain Analysis (VCA) method, and feasibility analysis. In fostering innovation capability, students are guided to enhance e-commerce platform user retention rates by employing techniques such as correlation analysis and regression modeling to identify core influencing factors and evaluate the effectiveness of various platform strategies. This approach cultivates their scientific decision-making skills and research dedication. Through a case study of a digitally upgraded clothing enterprise, students are encouraged to pinpoint innovation opportunities, including the integration of intelligent technologies in production, live streaming e-commerce for sales, and personalized customization. Subsequently, they are tasked with designing information system solutions that facilitate user involvement in design and precision marketing, thereby reinforcing their awareness of innovation and concepts of value creation. Technology ethics education is integrated into the curriculum, emphasizing issues such as information cocoons and algorithmic discrimination in recommendations, with the aim of instilling the ethical principle of technology for good. In the context of fostering social responsibility, students are guided to perform multi-dimensional feasibility assessments of new energy vehicle information systems, considering technical, economic, and social perspectives. By contrasting these assessments with negative examples that overlook technical feasibility or social impact, students' scientific attitudes and risk awareness are enhanced. Addressing topics such as the equitable distribution of charging stations, accessible interface design, and data privacy protection, students engage in group discussions and solution demonstrations to apply concepts of fairness, justice, and concern for public welfare in their design processes. This

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approach not only reinforces their sense of social responsibility and understanding of engineering ethics but also nurtures their commitment to serving the nation through science and technology.

3.2. System Analysis Stage

This stage emphasizes the structured modeling of requirements and logical design, with the primary objective of establishing a clear link between business requirements and technical logic. This is accomplished through requirements investigation, business process analysis, data flow diagram creation, and multi-dimensional feasibility analysis. Guided by the core design principle of "scenario-driven + competence cultivation", ideological and political elements—including communication and collaboration, scientific rigor, innovation ethics, and social responsibility—are integrated throughout the knowledge application process. By implementing teaching designs that concretize cases, contextualize practices, and materialize values, the collaborative development of professional skills and value concepts is facilitated.

3.2.1. Scenario-based Design of Service-Oriented Professional Competence

Centered on requirements investigation methods, an integrated teaching pathway is developed, comprising "introduction to livelihood cases—role-based collaborative practice—penetration of value concepts". Case selection emphasizes livelihood-related scenarios, such as optimizing the hospital registration process and upgrading university library systems. Empathetic investigation tasks are crafted to encourage students to employ non-leading questioning techniques, exemplified by inquiries such as, "Are you troubled by the waiting time in the current registration process?" This approach aims to minimize subjective bias and foster a professional attitude that respects facts and upholds objectivity in practice. In the design of collaboration, roles are distinctly defined, including interview execution, recording and collation, and data analysis. Additionally, mechanisms for regular group discussions and negotiation of disagreements are established. Students are guided to resolve conflicts and build consensus through division of labor and collaboration, thereby enhancing their teamwork spirit and understanding of democratic decision-making. In the realm of value integration, focusing on the university library system upgrade project, students are instructed to identify the core needs of faculty and students regarding seat reservation, literature search, and accessible services through comprehensive investigations. They are then tasked with designing a requirement priority matrix that deeply embeds the people-centered concept into the requirement screening process, ultimately enhancing their service awareness and social responsibility.

3.2.2. Integrated Design of Rigorous Innovation and Ethical Responsibility

Focusing on business process analysis, data flow diagram creation, and feasibility assessment, a closed-loop teaching design is established, encompassing "standardization refinement—innovation practice—ethical immersion". To cultivate rigor, students are tasked with optimizing hospital outpatient processes by thoroughly analyzing existing workflows and adhering strictly to professional terminology, including terms like triage and pre-examination. Negative examples, such as batch confusion resulting from unclear process labeling in pharmaceutical companies, are presented to reinforce a commitment to precision. In examining the e-commerce order processing system, attention is directed toward details and standards, including symbol usage and logical coherence in data flow diagrams. Through iterative process refinement, students develop a craftsmanship ethos centered on excellence. In the integrated design of innovation and ethics, students are encouraged to conceptualize future-state business processes informed by technological trends, such as AI consultations and the cross-regional sharing of electronic medical records. Feasibility debates help strike a balance between innovation breakthroughs and practical application, fostering critical thinking and technology orientation for societal benefit. Responsibility cultivation involves multi-dimensional feasibility

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analysis teaching, exemplified by cases like enterprise ERP systems implementation and educational institutions' system procurement. This approach enhances technical ethics and risk prevention through lessons from data breaches due to interface vulnerabilities. Economic aspects are addressed through net present value calculations, return on investment modeling, and comparisons with instances of capital chain disruption from blind procurement, nurturing students' scientific decision-making skills and integrity. Social considerations encompass enhancing employee digital skills, adapting accessibility for individuals with disabilities, and reducing server carbon emissions, encouraging students to incorporate sustainable development concepts and principles of fairness and justice into their evaluations, thus reinforcing their social responsibility awareness and engineering ethics literacy.

3.3. System Design Stage

This stage represents a crucial phase in the information system lifecycle, emphasizing the deployment of technical solutions and architectural implementation. It revolves around fundamental activities like system architecture design, database design, user interface design, and system security design, culminating in the transition from conceptual models to practical execution. Informed by the central design principle of “technical practice + value anchoring”, ideological and political aspects—encompassing inventive thought, shared accountability, ethical compliance, and humanistic concern—are intricately woven into the entirety of the technical design process, facilitating the harmonized advancement of technical proficiency and value ideologies.

3.3.1. Scenario-based Design of Collaborative Innovation and Responsibility Awareness

An integrated teaching approach, focusing on system architecture design and module partitioning, establishes a pathway of “case analysis—role play—responsibility integration”. Emphasis is placed on selecting representative cases, such as optimizing high-concurrency processing bottlenecks in large-scale e-commerce systems. Students are encouraged to propose innovative solutions leveraging technical concepts like microservices architecture and distributed caching to foster creative problem-solving skills.

In scenario simulations, students engage in a realistic development environment assuming roles like architecture planner, technology researcher, and module designer. Collaborative tasks, including requirements decomposition, solution deliberation, and conflict resolution, reinforce the team's ethos of fulfilling individual responsibilities and promoting efficient collaboration. During practical training sessions, students are tasked with module partitioning for an online education platform, starting from overall system performance evaluation, delineating functional boundaries and data interaction logic of core modules, and standardizing interface protocols and data formats. The training instills a meticulous approach emphasizing that success or failure lies in the details, enhancing students' sense of responsibility towards their modules and accountability to the system as a whole.

3.3.2. Integrated Design of Ethical Immersion and Humanistic Care

A closed-loop teaching design centered on database design, system security design, and user interface design is established, characterized by the phases of “standardization refinement—compliance guidance—humanistic integration”. This approach aims to cultivate data security and compliance ethics, initiating with database design. It introduces negative cases in which financial systems incurred substantial losses due to improper field type definitions, thereby underscoring the necessity of adhering to normalization and data validation standards while fostering a rigorous and pragmatic professional attitude. By interpreting the core provisions of the Data Security Law and the Cybersecurity Law, and utilizing incidents such as corporate data leaks as cautionary examples, students are encouraged to devise multi-level security protection solutions. This process enhances their understanding of national security concepts and risk

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prevention awareness. Using the design of a medical information system as a practical scenario, students are instructed to implement the principles of informed consent and minimum necessity, anonymize sensitive patient data, and integrate the ethical concept of technology for good.

In fostering humanistic care, this study begins with user interface design, focusing on the optimization of the library borrowing system for elderly users. Students are encouraged to identify operational challenges through investigation and to design age-friendly features, such as enlarged fonts and voice navigation. In accordance with the requirements of the Law on the Construction of a Barrier-Free Environment, accessibility features, including screen reader compatibility, are mandatorily incorporated into the design of service systems for individuals with disabilities, thereby enhancing the commitment to technological inclusivity. By conducting a comparative analysis of medical device and social software interfaces, students gain insight into the design philosophy that emphasizes form following function, thereby cultivating rational and pragmatic design thinking.

3.4. System Implementation Stage

This stage represents a crucial transition period from technical solutions to operational systems, involving essential activities such as coding, system testing, deployment, data migration, and system switchover. In line with the design principle of "practice-driven + internalized responsibility", ideological and political aspects, encompassing craftsmanship, quality consciousness, teamwork skills, and risk mitigation awareness, are integrated across the entire technical implementation process. This integration facilitates the harmonized development of technical implementation skills and value ideologies.

3.4.1. Scenario-based Design of Standardization Quality and Collaborative Responsibility

Guided by industry coding standards and exemplified by instances of uninitialized variables causing calculation errors in financial software, students are encouraged to engage in code reviews to rectify logical flaws and formatting discrepancies, fostering a culture of pursuing excellence. Negative scenarios, like social software encountering login issues due to inadequate network testing, are presented to highlight the risks of insufficient test coverage. Industry professionals are invited to share defect management processes, emphasizing the principle that code signifies accountability and quality equates to vitality.

To promote collaboration and legacy stewardship, practical project scenarios are enacted, assigning groups tasks such as server setup, network troubleshooting, and data transfer to delineate roles and interaction points. By simulating faults like IP conflicts and port congestion, the ethos of teamwork based on specialization and mutually beneficial outcomes is reinforced. Using the upgrade of a retail inventory system as a case study, the importance of historical data cleansing, standardization, and redundant backups is underscored. Through exercises in migrating order data, students develop a respect for informational assets and historical duties.

3.4.2. Integrated Design of Risk Prevention and Value Infiltration

Centered on system switchover, a closed-loop teaching approach comprising "solution comparison—scenario deduction—value anchoring" is developed to enhance risk awareness and ethical responsibility. When teaching solution design, a bank's core business system upgrade serves as a typical case to compare parallel switchover, direct switchover, and phased switchover, guiding students to cultivate decision-making skills that balance risk and return. Through scenario simulation, data conflict scenarios arising from old and new system customer information format incompatibility are replicated. Students are tasked with devising data compatibility testing rules, failure rollback plans, and business emergency measures to refine their risk assessment and emergency response capabilities. The value integration phase emphasizes the impact of switchover solutions on users. For instance, in financial system design,

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business circuit breakers and emergency channels are integrated to ensure user fund security and business continuity, promoting a user-centric value approach. By presenting solutions and facilitating debates, students are encouraged to consider technical feasibility, business continuity, and user welfare comprehensively, thereby enhancing their holistic perspective and technical ethical responsibility.

3.5. System Operation and Maintenance Stage

This stage is crucial for ensuring the long-term effectiveness of information systems. The primary objective is to maintain the stable and efficient operation of the system, consistently aligning with user and business needs through daily operational management, comprehensive maintenance guarantees, security and reliability management, and mechanisms for continuous improvement. Guided by the core design principle of "support-driven + responsibility immersion", ideological and political elements—including a sense of responsibility, dedication, service orientation, and ethical literacy—are integrated throughout the entire operation and maintenance process. This approach facilitates the coordinated enhancement of technical support capabilities and value concepts.

3.5.1. Scenario-based Design of Stability Assurance and Service Orientation

An integrated teaching framework is established using system monitoring, maintenance, data backup, and user support as foundational elements, encompassing the stages of "responsibility refinement—compliance guidance—service immersion". To foster a sense of responsibility for stability assurance, students analyze operational and maintenance cases from e-commerce platforms during peak transaction periods, focusing on core indicators such as system response time and resource utilization. By incorporating instances of platform paralysis due to monitoring delays, students enhance their risk prediction skills. Through simulations of faults, including server CPU overload and bandwidth congestion, students are instructed to develop tiered warning and emergency response protocols, internalizing the understanding that system stability is critical to business continuity.

Emphasizing the intricacies of hardware and software maintenance, cases of business interruptions caused by maintenance oversights are presented, instilling a craftsmanship ethos centered on excellence. Collaborative maintenance scenarios involving multiple departments are designed to reinforce the importance of teamwork. In the realm of data security and service awareness, students examine a case involving a hospital information system compromised by viruses, guiding them to formulate incremental, full, and off-site multi-level backup strategies. Utilizing the university course selection system as a context, common user issues are simulated. Through the analysis of both positive and negative cases, students are trained to articulate clear explanations in accessible language, thereby cultivating a user-centered service perspective and fostering empathy.

3.5.2. Integrated Design of Performance Optimization and Ethical Commitment

Centering on system performance optimization, a closed-loop teaching design encompassing "innovation breakthrough—ethical constraint—continuous improvement" is developed to enhance innovative thinking and social responsibility. In the context of teaching performance optimization, students are guided through a case study addressing the resolution of lag issues in video platforms. They compare the optimization effects of coding algorithms and caching strategies while designing innovative solutions, including load balancing and edge computing deployment. This process fosters innovative thinking and an entrepreneurial mindset focused on continuous improvement through the investigation of bottlenecks and iterative solutions in high-concurrency scenarios.

In the ethical immersion segment, emphasis is placed on the ethical boundaries associated with technological optimization. Risks such as "big data-enabled price discrimination" and "information cocoons" are critically analyzed, prompting students to develop indicators for

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evaluating algorithmic fairness. Optimization solutions must consider the needs of vulnerable populations, such as adapting government service systems for the elderly and disabled. This integration of the ethical concept of technology for good, along with principles of fairness and justice, aims to strengthen awareness of social responsibility and ethical commitment.

4. Design of the Teaching Evaluation System for Curriculum-based Ideological and Political Education

A teaching evaluation system for curriculum-based ideological and political education is developed to assess the integration of ideological and political education into the curriculum effectively. The system aims to ensure the coordinated implementation of knowledge transmission, ability cultivation, and value guidance. It emphasizes clear indicator dimensions and diverse evaluation methods, encompassing core knowledge, practical abilities, and the cultivation effectiveness of ideological and political literacy.

4.1. Design of Evaluation Indicators

The evaluation of curriculum-based ideological and political education is structured on a three-dimensional framework comprising knowledge mastery, skills and literacy, and ideological and political performance. Professional evaluation serves as a means to incorporate value guidance, effectively aligning the objectives of ideological and political integration through the design of an indicator system, thereby guaranteeing the realization of the triple teaching goal of knowledge dissemination, skills development, and value orientation.

The knowledge mastery dimension emphasizes the comprehension and application of fundamental knowledge throughout the system lifecycle. It encompasses understanding system planning methods, applying system analysis techniques, adhering to architectural principles in system design, specifying processes for system implementation, and ensuring technical control in system operation and maintenance. Evaluation criteria are based on the accuracy of knowledge responses, the thoroughness of problem analysis, and the professionalism of case presentations. This approach utilizes knowledge assessment to reinforce the cognitive groundwork for ideological and political integration. The ability and literacy dimension closely tracks the integrated development of practical skills and ideological and political awareness at each stage. This includes proficiency in solution design and collaborative skills during the planning phase, adeptness in transforming requirements and effective communication during the analysis phase, capability in architecture evaluation and presentation during the design phase, proficiency in collaborative problem-solving and emergency response during the implementation phase, and competence in ensuring stability and collaboration during the operation and maintenance phase. Scoring emphasizes the quality of task completion, the effectiveness of collaboration, and adaptability performance, thereby enhancing practical skills, responsibility awareness, and a collaborative spirit simultaneously.

The dimension of ideological and political performance specifically assesses the effectiveness of value guidance, focusing on adherence to professional ethics and industry standards in practice. It also evaluates the extent to which social values, humanistic care, safety responsibility, and other ideological and political concepts are integrated into technical solutions, as well as the enthusiasm for participation and innovation of viewpoints in classroom discussions on ideological and political topics. Scoring incorporates comprehensive evaluations, including compliance with specifications and the depth of concept integration, ensuring that ideological and political education yields measurable outcomes.

4.2. Selection of Evaluation Methods

This course employs a diverse and collaborative assessment approach, highlighting the integration of formative and summative evaluations to guarantee comprehensive and unbiased

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evaluation outcomes. Assignment assessment contributes 30% towards the final grade, predominantly assessing students' performance in essential tasks at various stages, including system planning solution design, system analysis report composition, design documentation creation, implementation record organization, and operation and maintenance report compilation. It assesses their ability to apply knowledge accurately, their practical skills level, and the incorporation of curriculum-based ideological and political concepts into task fulfillment.

Group project evaluation constitutes 20% of the total grade, utilizing the course's comprehensive practice project for assessment. It evaluates the professionalism and quality of project outcomes, focusing on students' contributions, collaboration skills, communication abilities, sense of responsibility, and problem-solving performance through task division records, peer evaluations, and personal reflection reports. Classroom performance evaluation also contributes 20% to the final grade, examining students' enthusiasm in classroom participation, depth of understanding of ideological and political issues, coherence in expressing viewpoints, and cooperative demeanor in team interactions. This evaluation is based on daily classroom observations, records of ideological and political discussions, and case analysis presentations. Examination evaluation makes up 30% of the total grade and employs a mix of closed-book and open-book formats. The exam assesses students' grasp of core course knowledge, application of theoretical concepts, and understanding of ideological and political principles, evaluating their proficiency in professional knowledge and adherence to ethical standards while integrating values in practical contexts.

4.3. Construction of Feedback Mechanism

Establishing a closed-loop evaluation feedback mechanism is a fundamental component of the curriculum-based ideological and political education teaching system. The primary objective is to enhance teaching effectiveness for both educators and learners by implementing diverse feedback strategies. This approach aims to facilitate the comprehensive enhancement of students' knowledge acquisition, skills development, literacy, and ideological and political awareness. Ultimately, it serves as a cornerstone for nurturing interdisciplinary talents.

In designing teacher feedback mechanisms, the focus is on creating an immediate and accurate evaluation feedback system that delivers results promptly post-assessment. The feedback content strikes a balance between affirmation and guidance. It highlights students' strengths in applying professional knowledge, executing practical skills, and integrating ideological and political concepts effectively. This includes assessing the precision of knowledge application, teamwork efficiency, and ethical responsibility levels, thereby reinforcing students' sense of accomplishment and values. Simultaneously, it objectively identifies areas of improvement such as fragmented knowledge, non-standard practical procedures, and superficial ideological and political concept integration. By aligning these findings with course objectives, teaching demands, and individual variances, actionable improvement strategies are proposed. This approach ensures the relevance and feasibility of feedback, offering precise guidance for the seamless integration of ideological and political components.

By providing precise feedback, teaching design facilitates the creation of an educational closed loop that is continuously refined. This process aids students in addressing knowledge gaps, enhancing practical skills, and advancing ideological and political awareness through reflection and mutual support. Consequently, it enables the simultaneous development of professional expertise and values, ensuring the effective realization of the trinity teaching objective encompassing knowledge transmission, ability cultivation, and value guidance within curriculum-based ideological and political education.

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5. Conclusion

This study utilizes the "Information System Analysis and Design" course as a practical platform and employs the complete information system lifecycle as a framework. It systematically integrates ideological and political elements such as strategic thinking, craftsmanship spirit, and responsibility awareness. The study delves deeply into the exploration of integrating ideological and political education into engineering professional courses. It refines the fundamental ideological and political aspect of technology for societal benefit, enhances the theoretical framework of ideological and political education in engineering courses, and offers practical and scalable solutions for enhancing ideological and political aspects in similar courses. This research effectively advances the comprehensive implementation of the primary objective of moral education in course instruction, offering practical insights for guiding values and enhancing the quality of higher engineering education in the contemporary era.

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