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A Study on Pathways for Integrating Digital and Intelligent Curriculum Development with Ideological and Political Education in Courses—Taking the Course "Energy Management and Operations" as an Example

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Abstract
Against the backdrop of the coordinated advancement of educational digitization and the integration of ideological and political education into the curriculum, how to leverage the educational potential of digital and intelligent technologies to promote the deep integration of curriculum education and value-oriented guidance has become a key issue in higher education curriculum reform. In the curriculum reform of the "Energy Management and Operations" course, based on course objectives, instructional content, and existing reform foundations, this study analyzes the practical conditions for integrating digital and intelligent course development with ideological and political education. It constructs an overarching integration framework that unifies knowledge, competencies, and values, and coordinates technology, content, instruction, and assessment. Furthermore, it proposes practical pathways for integration in areas such as the development of an integrated resource repository, the construction of three maps (knowledge, ideological and political education, and competencies), innovation in blended teaching models, the application of artificial intelligence in teaching, and holistic assessment. The study concludes that the key to integrating digital and intelligent courses with ideological and political education lies in guiding technological applications with educational objectives, establishing intrinsic connections between professional knowledge, corporate practice, and ideological and political elements, and forming a teaching model characterized by teacher guidance, student-centered learning, and human-machine collaboration. This research can serve as a reference for the digital and intelligent transformation of energy management courses and the reform of ideological and political education within these courses.

Keywords: Digital and Intelligent Curriculum, Ideological and Political Education in the Curriculum, Integration Pathways

1. Introduction

Comprehensively advancing the integration of ideological and political education into the curriculum is a strategic measure for fulfilling the fundamental task of fostering virtue through education, as well as a key step in enhancing the quality of talent development [1]. In May 2020, the "Guidelines for Integrating Ideological and Political Education into the Curriculum at Institutions of Higher Education," issued by the Ministry of Education, clearly stated that "integrating ideological and political education into the curriculum is an important task for comprehensively improving the quality of talent development" and that " the educational role of every course must be fully leveraged" [2], and that value formation, knowledge transmission, and competency development must be integrated as one. The continuous iteration and in-depth evolution of digital and intelligent technologies have opened up entirely new pathways and injected diverse momentum into the reform and innovative development

of ideological and political education in higher education curricula, while also presenting higher demands and challenges [3]. In April 2025, the "Opinions of the Ministry of Education and Eight Other Departments on Accelerating the Digital Transformation of Education" proposed promoting the deep integration of artificial intelligence (AI) into the entire process of teaching and learning to unleash the potential of AI to empower education [4]. As a key component in fulfilling the fundamental task of fostering virtue through education, the quality and approach of curriculum-based ideological and political education directly impact the effectiveness of talent cultivation [5]. In 2026, the Ministry of Education and four other departments jointly issued the "'Artificial Intelligence + Education' Action Plan" [6], clearly stating the need to promote the integration of intelligent technologies with all elements of education and their permeation throughout the entire educational process. This provides institutional safeguards for exploring pathways to integrate the development of ideological and political education in the curriculum with digital and intelligent transformation. At the same time, under the influence of digital and intelligent technologies, traditional models for developing ideological and political education in the curriculum struggle to meet the demands of the digital and intelligent era, making it urgent to explore new operational logics and practical pathways.

"Energy Management and Operations" is a core course in the Energy Economics program. Efforts to integrate ideological and political education into the course have already been undertaken in the early stages, and preliminary explorations into the development of digital and intelligent course design have been conducted. However, the process has faced challenges due to a lack of systematic integration between specialized knowledge, ideological and political elements, and corporate (ideological and political) case studies. Based on this, this paper takes the "Energy Management and Operations" course as a case study. It explores how to leverage digital and intelligent technologies to enhance the relevance and effectiveness of ideological and political education in the course—through an integrated resource repository, knowledge graphs, blended learning, AI-enabled teaching, and end-to-end assessment—and to establish a pathway for integrating digital and intelligent course development with ideological and political education. The research in this paper will help advance the fundamental task of fostering virtue and nurturing talent in the new era, improve teachers' digital and intelligent teaching capabilities, and enhance students' competencies and capabilities in the AI era.

2 The Practical Foundation for Integrating the Digital Transformation of Courses with the Integration of Ideological and Political Education into the Curriculum

2.1. The Course Objectives and Content Have a Distinct Focus on Ideological and Political Education

"Energy Management and Operations" is a specialized course that integrates theory, policy, and practice. The course aims to guide students in systematically mastering the fundamental theories, operational mechanisms, and practical methods of energy management, and to cultivate their ability to analyze and solve energy management issues at the national, industrial, and corporate levels. At the same time, it reinforces students' awareness of green and low-carbon development, energy security, ecological civilization, and social responsibility. The course objectives have a distinct focus on ideological and political education.

The course content is closely linked to China's energy development strategy, as well as industrial and corporate development practices, providing a rich foundation for the natural integration of ideological and political education into the curriculum. For example, as the digital transformation of industries and the industrialization of digital technologies continue to advance [7], the national macro level, the industrial meso level, and the corporate micro level must all transition toward green and low-carbon development, thereby profoundly embodying ideological and political elements such as the national strategies for high-quality development and green development. Furthermore, the course's coverage of energy management systems and strategic energy management—which addresses energy resource endowments, energy security, and national development strategies—can guide students to recognize the significance of energy management from the perspective of the nation's overall development. Energy industry management, which covers structural adjustments in the energy sector, market operations, and the low-carbon transition, helps students understand the sustainable relationship among economic development, resource utilization, and ecological conservation; enterprise energy management and energy conservation management emphasize energy efficiency, energy conservation, carbon reduction, and standardized operations, fostering students' professional responsibility, awareness of regulations, and green business philosophy; energy innovation management, when integrated with the development of new energy technologies, changes in management models, and digital transformation, enhances students' innovative mindset, practical commitment, and digital literacy.

2.2. The Course Has the Resource Foundation to Integrate Digital and Intelligent Technologies with Ideological and Political Education

In the early stages of the course, a series of teaching reforms were implemented around topics such as integrating ideological and political education into the curriculum and the integration of industry and education, laying a solid resource foundation for the development of digital and intelligent courses and the integration of ideological and political education into the curriculum. In terms of integrating ideological and political education into the curriculum, the course has incorporated content such as the national energy strategy, energy conservation and emissions reduction, and green, low-carbon development into theoretical lectures, case studies, post-class surveys, competition coaching, and thesis writing, thereby forming a teaching model that combines professional knowledge with value-oriented guidance. Currently, the course has accumulated a wealth of digital resources for ideological and political education, such as relevant case studies, high-quality documentary videos (e.g., "China's Energy Transition That Shook the World," "Armored Mountains and Rivers," and "China's Carbon Path"), classic digital literature resources such as *China in the History of World Energy*, and open course resources related to the curriculum, such as "Synergy Among Energy, Computing Power, and Artificial Intelligence." These digital resources provide a solid foundation for integrating the course's digital development with ideological and political education.

However, the use of these digital ideological and political education resources in teaching is currently rather scattered, and they have not yet been linked in a stable, structured, and systematic way to course content, key concepts, case studies, learning tasks, and competency development. Therefore, in the process of developing this course's digital and intelligent infrastructure, it is necessary to classify, tag, and screen existing digital resources—particularly those related to ideological and political education—based on the course objectives and knowledge framework. By constructing knowledge maps, ideological and political education maps, and competency maps for the course, we can improve the alignment between digital ideological and political education resources and key knowledge points, competency objectives, and ideological and political education goals.

3 An Overall Approach to Integrating the Development of Digital and Intelligent Courses with the Integration of Ideological and Political Education into the Curriculum

The integration of digital and intelligent curriculum development with the incorporation of ideological and political education into the curriculum should be guided by educational objectives, centered on the "unified goal of knowledge, skills, and values," and supported by disciplinary content as the vehicle, digital and intelligent technologies as the foundation, teaching activities as the main thread, and assessment and feedback as the safeguard, thereby forming a comprehensive framework characterized by coordination across multiple stages (as shown in Figure 1).

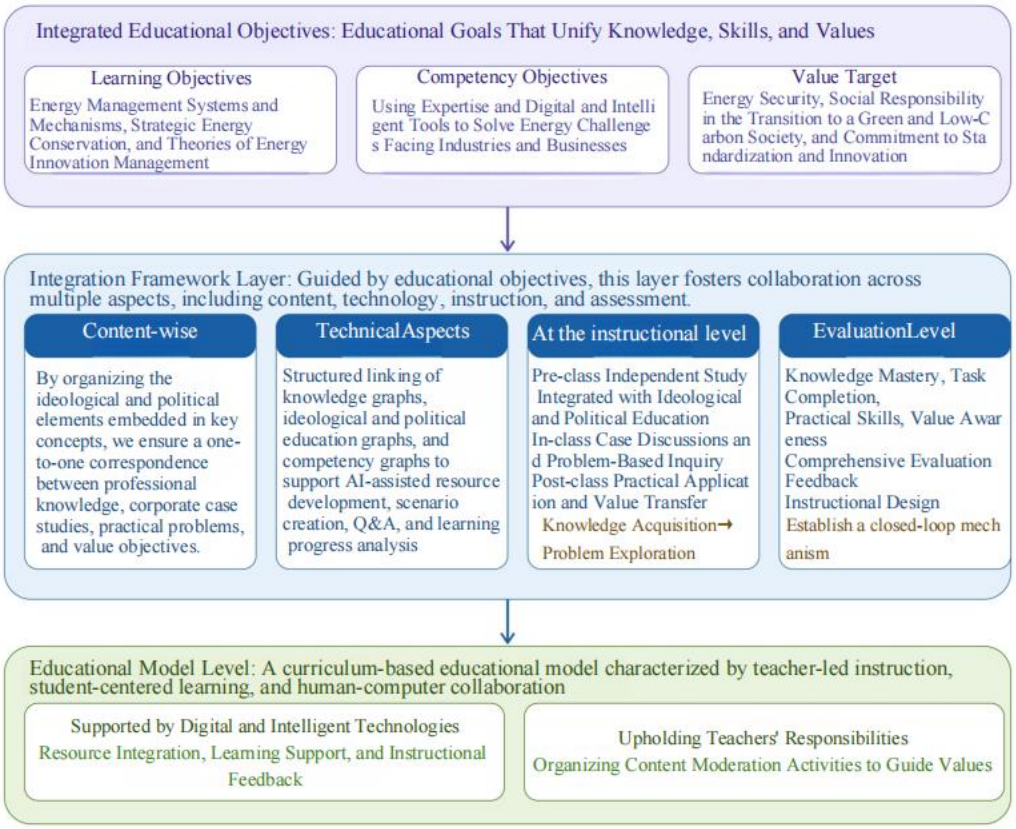


Fig 1: Overall Approach to Developing the "Energy Management and Operations" Digital and Intelligent Course and Integrating Ideological and Political Education into the Curriculum

3.1. Define the Integrated Goal of Unifying Knowledge, Skills, and Values

In terms of knowledge objectives, the course guides students to systematically master the basic theories and methods of energy management systems, strategic energy management, corporate energy management, energy conservation management, and energy innovation management. In terms of competency objectives, it cultivates students' ability to apply professional knowledge and digital and intelligent tools to identify, analyze, and solve practical problems in industrial and corporate energy management. In terms of value objectives, the course guides students to understand the relationship between energy management and national energy security, the green and low-carbon transition, and the construction of an ecological civilization, while strengthening their sense of social responsibility, professional ethics, and commitment to innovation. Through the coordinated design of these three types of objectives, the integration of ideological and political education into the curriculum is no longer treated as supplementary content separate from professional instruction, but rather is woven throughout the entire process of knowledge acquisition, case analysis, and practical assignments.

3.2. Building an Integrated Framework That Harmonizes Technology, Content, Instruction, and Assessment

At the content level, identify the ideological and political elements embedded in course topics and align professional knowledge, corporate case studies, practical problems, and value objectives with the relevant topics; At the technical level, leverage knowledge graphs, ideological and political education maps, and competency maps to establish structured links between course content and teaching resources; at the

instructional level, integrate ideological and political education into pre-class independent study, in-class case discussions, and post-class practical extensions, guiding students to shift from passive knowledge acquisition to active problem-based inquiry; at the assessment level, comprehensively evaluate students' mastery of knowledge, task completion, practical skills, and value awareness to establish a closed-loop mechanism where assessment results inform instructional design.

As shown in Figure 1, within this framework, digital and intelligent technologies primarily serve to integrate resources, support learning, and provide instructional feedback, while teachers are responsible for content review, activity organization, and value guidance, thereby forming a teacher-led, student-centered, human-machine collaborative.

4. Practical Approaches to Integrating Digital and Intelligent Curriculum Development with Ideological and Political Education in the Curriculum

4.1 Building an integrated resource repository combining "specialized knowledge, ideological and political elements, and ideological and political case studies"

The application of digital and intelligent technologies can significantly promote the gradual cultivation of ideological and political knowledge, spirit, and behavior [8]; at its core is the use of these technologies to reshape digital resources, such as ideological and political case studies. Digital resources serve as a vital vehicle for the development of digital and intelligent courses and the integration of ideological and political education into the curriculum. They should be organized around a knowledge framework, with teaching syllabi, course materials, case studies, videos, exercises, and supplementary literature categorized and annotated according to knowledge points, competency objectives, and ideological and political objectives. This establishes a correspondence between resources—such as specialized knowledge, ideological and political elements, and corporate case studies—and the corresponding competencies. For example, the course on Energy Strategy Management can be linked to case studies on China's energy security and energy transition. Corporate energy management can be linked to energy-saving and carbon-reduction practices at major energy-consuming enterprises. Energy innovation management can be linked to case studies on the application of new energy technologies and innovations in management models. Instructors can leverage artificial intelligence to perform resource retrieval, preliminary classification, and tag generation, while also reviewing the authenticity, applicability, and value orientation of the content. This approach promotes a shift from the scattered accumulation of course resources to structured management, laying the foundation for the natural integration of ideological and political education into course content.

4.2. Establishing a Logical Chain for Curriculum Development That Integrates the "Knowledge—Ideological and Political Education—Competency" Triad

With the assistance of AI technology, the generated knowledge graph can link course content points, teaching resources, ideological and political elements, corporate case studies, videos, literature, and other resources to competency objectives, thereby revealing the intrinsic logic of the course content. The knowledge graph serves as the structural foundation for the integration of the three graphs. Based on course objectives, a course knowledge graph can be constructed across four dimensions: knowledge, resources, problems, and competency frameworks.

The Ideological and Political Education Map serves as a bridge for value-based guidance. Ideological and political education integrated into the curriculum should not be treated as a separate component added outside the map; rather, it should be embedded within knowledge nodes according to the correspondence between "knowledge points—events—tasks—ideological and political education points" [2]: At any given knowledge point, students can simultaneously access case studies, tasks, and value-based themes, thereby gaining an understanding of the real-world context and social significance of their specialized knowledge.

The competency map serves as a measure of educational effectiveness. It breaks down the competency objectives of the curriculum into observable and assessable indicators, linking them bidirectionally with knowledge and ideological and political education nodes, thereby enabling the synergistic achievement of competency development and value formation within a single framework. The learning behavior data accumulated under the guidance of the competency map also provides a structured basis for holistic assessment.

4.3. Developing a "Read—Think—Analyze—Integrate—Expand—Build" Blended Learning Model

The development of digital and intelligent courses should move beyond a one-way, teacher-centered teaching approach. Instead, it should organically integrate online resources, self-directed learning, classroom interaction, and practical assignments to form a blended learning model that spans pre-class, in-class, and post-class activities. Before class, instructors use the course platform to share policy documents, video materials, corporate case studies, and discussion questions, guiding students to read the materials and organize their thoughts—thereby fostering both "reading" and "reflection"; Artificial intelligence-powered learning assistants can provide explanations of fundamental concepts and recommend resources, but they cannot replace students' independent reading and critical judgment. During class, instructors organize case studies, classroom debates, group presentations, and scenario-based decision-making exercises centered on real-world energy management issues, guiding students to compare different perspectives and solutions to achieve "discernment" and "integration," thereby fostering a sense of responsibility and value judgment as they apply their professional knowledge to analyze problems. After class, through tasks such as surveys on energy management in their hometowns, analyses of corporate energy-saving case studies, project proposal design, extended reading, and academic competitions, students are guided to "expand" and "consolidate" their knowledge. Consequently, the integration of ideological and political education into the curriculum is no longer confined to a single teaching segment but is embedded throughout the entire teaching process via digital and intelligent technologies.

4.4. Using AI to Enhance the Ideological and Political Education Engine and Empower the Entire Teaching Process

Artificial intelligence can be integrated into various stages—including resource development, teaching assistance, learning support, and assessment feedback—to form functional modules such as AI teaching assistants, AI learning assistants, and AI assessment assistants. AI teaching assistants help instructors retrieve energy policies, organize corporate case studies, generate preliminary teaching materials, and design scenario-based tasks; AI-powered student assistance provides explanations of key concepts, learning path suggestions, and recommendations for supplementary resources based on students' learning profiles, and can utilize generative AI to create animations, virtual scenarios, or digital avatars for explanations, thereby enhancing the contextual nature of practical instruction; AI-powered assessment analysis assists in analyzing classroom interactions, assignment texts, and online learning data, providing teachers with insights into student learning progress. It is important to emphasize that the actual effectiveness of AI-based teaching tools is influenced by instructional design, usage methods, and evaluation approaches; the use of technology cannot simply be equated with educational reform. The role of AI in the curriculum is to assist teachers and support students: generated content must be reviewed by teachers, and key evaluations must still be based on teachers' professional judgment and students' actual performance to ensure the precise implementation of value-oriented guidance.

4.5. Improve the Mechanisms for Comprehensive, Multi-Dimensional Evaluation and Teaching Support Throughout the Entire Process

The integration of digital and intelligent courses with ideological and political education in the curriculum requires the establishment of a comprehensive evaluation system covering the three dimensions of knowledge, skills, and values. The evaluation should assess not only students' mastery of energy management theories and methods but also their abilities in case analysis, problem-solving, teamwork, and practical application; it should also focus on students' understanding of issues such as energy security, green and low-carbon development, and corporate social responsibility. In terms of evaluation methods, formative and summative assessments will be combined, utilizing teaching platforms and artificial intelligence tools to assist in analyzing learning behaviors, conducting surveys, and analyzing assignment texts. Evaluation results should be promptly fed back into the design of resource delivery, teaching assignments, and classroom activities, forming a closed-loop cycle of "teaching implementation—learning assessment—feedback and improvement." However, learning data and AI analysis results may only serve as supplementary evidence for pedagogical decisions. At the same time, a faculty review system should be established for AI-generated case studies, data, and evaluation feedback. The scope of students' use of AI tools should be clearly defined, and requirements regarding data security, intellectual property, and academic integrity should be standardized to ensure that digital and intelligent technologies consistently serve the educational objectives of the course.

5. Summary

The development of digital and intelligent technologies has provided new technical conditions and practical opportunities for the integration of ideological and political education into university curricula. Based on the educational objectives of the "Energy Management and Operations" course—which aim to unify the transmission of knowledge, the cultivation of competencies, and the shaping of values—this study clarifies the practical foundation for integrating digital and intelligent course development with ideological and political education. It constructs an overarching framework characterized by multi-faceted collaboration: guided by educational objectives, centered on the "unified goal of knowledge, competencies, and values," with professional content as the vehicle, supported by digital and intelligent technologies, with teaching activities as the main thread and evaluation and feedback as safeguards. Furthermore, this study designs a path for integrating ideological and political education with digital and intelligent course development across five dimensions: First, establishing an integrated resource repository combining "disciplinary knowledge—ideological and political elements—corporate case studies" to provide a content vehicle for integration; Second, we have established the fundamental logic for integrating digital intelligence with ideological and political education through the interconnection of three "knowledge—ideological and political—competency" maps, using the multidimensional relationships among the knowledge map, ideological and political map, and competency map to achieve structured teaching content and precise value guidance; third, we have developed a blended teaching model of "reading—reflection—critique—integration—expansion—construction," weaving ideological and political education throughout the entire process—before, during, and after class; Fourth, AI is utilized to refine ideological and political guidance, empowering the entire teaching process while upholding teachers' responsibilities for content review and value-based guidance; Fifth, a comprehensive, multi-dimensional evaluation and teaching support mechanism is refined to form a closed-loop educational cycle of "teaching implementation—learning assessment—feedback and improvement." These five pathways sequentially cover the five dimensions of content, structure, process, technology, and support. They are interconnected and build upon one another, collectively forming an implementation framework for the systematic integration of ideological and political education into digital and intelligent course development.

References

1. Qiu Mengjie. An Analysis of Pathways for Building Ideological and Political Education in Digital-Assisted Design Courses Through Digital and Intelligent Technologies.Art Education Research,2026(15):111-113
2. Ministry of Education. Notice on Issuing the "Guidelines for Integrating Ideological and Political Education into Higher Education Curricula" [EB/OL].(2020-05-28)[2025-10-20]https://www.gov.cn/zhengce/zhengceku/2020-06/06/content_5517606.htm
3. Zhao Jian. Exploring the Development of a Curriculum-Based Ideological and Political Education System for Vocational Education Major Clusters in the Digital and

Intelligent Era. Vocational Technology,2026(9) : 102-108
4. Ministry of Education. Regarding the Issuance of the "Opinions of the Ministry of Education and Eight Other Departments on Accelerating the Digital Transformation of Education"[EB/OL].(2025-04-11)https://www.gov.cn/zhengce/zhengceku/202504/content_7019045.htm
5. Dong Mengyuan, Liu Xuexi, Zheng Nanshan, Zhang Kefei. "Exploring the Integration of Ideological and Political Education into Basic Geodesy Courses in the Era of Digital Intelligence." University Education, 2026(4) : 99-105
6. The Ministry of Education Held a Symposium on Studying and Implementing the Spirit of General Secretary Xi Jinping's Important Reply to Student Representatives Participating in the China International College Students' Innovation Competition; Deepening Reforms in Innovation Education from the Perspective of the Grand Strategy of Integrating Education, Science and Technology, and Talent Development [N]. China Education Daily, 2024-11-14(1)
7. Shi Yujuan, Tian Jinghua, Wang Lixue. "Exploration and Practice of Integrating Ideological and Political Education into Accounting Courses in the Context of Digital and Intelligent Transformation." Financial Management Research,2026(7) : 155-160
8. Yao Jukun *et al*. Characteristics of Ideological and Political Education in Military Academy Major Courses and the Application of Digital and Intelligent Technologies.China Metallurgical Education, 2026(3) : 105-108

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