

Research on Optimizing the Pathways for Ideological and Political Education in University Public Elective Courses from a Digital Perspective

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Abstract: Digital technologies are creating new practical contexts for integrating ideological and political education into university public elective courses. In terms of value orientation, digitalization enables the expansion of content carriers, enhancement of situational learning experiences, promotion of resource sharing, and improvement of targeted provision of educational resources. Regarding practical challenges, issues such as insufficient alignment between teaching objectives, limited depth of resource integration, inaccurate matching of educational activities, and a disconnect between evaluation criteria and educational outcomes have constrained the effectiveness of such education initiatives. To address these challenges, a systematic optimization framework has been proposed, including strengthening coordination among educational objectives, integrating high-quality resources, accurately identifying learners' needs through profiling and matching supply with demand, and establishing a comprehensive evaluation mechanism. Some universities have already leveraged digital platforms to implement ideological and political education in elective courses, thereby developing exemplary cases that offer valuable references and practical models for further optimization of these approaches.

Keywords: Digitalization; public elective courses; ideological and political education; pathway optimization; teaching evaluation

1. Introduction

University public elective courses, characterized by their broad coverage and large student populations, serve as a vital channel for ideological and political education. The deep integration of digital technologies has transformed the teaching models and approaches to resource provision of these courses, while also placing new demands on their role in fostering students' ideological and political development. Currently, the implementation of such courses in this regard faces multiple challenges, including the alignment of educational objectives, the integration of educational resources, the accurate matching of educational supply and student needs, and the evaluation of educational effectiveness. How to optimize the pathways for ideological and political education in public elective courses from a digital perspective has become an urgent practical issue that requires further exploration. Systematic research on this issue can help improve the targeted effectiveness and practical outcomes of ideological and political education in public elective courses, further enrich the theoretical connotations and practical approaches of curriculum-based ideological and political education, and provide valuable references for the digital transformation of ideological and political education in higher education.

2. Value Orientation of Ideological and Political Education in University Public Elective Courses from a Digital Perspective

Digital technologies have been deeply integrated into the field of higher education, injecting new vitality into the ideological and political education functions of public elective courses. Clarifying their value orientation serves as the initial logical foundation for optimizing educational pathways, while also providing directional guidance for the subsequent analysis of challenges and the development of corresponding strategies.

2.1 Expanding the content carriers and value dimensions of ideological and political education

Digital technologies have enabled the integration of ideological and political education content into public elective courses to expand from static textual materials to dynamic resource-based models. The development of curriculum-based ideological and political education requires the integration of value cultivation into knowledge transmission; the multimodal presentation capabilities of digital platforms allow abstract values, such as patriotism and cultural confidence, to be presented and communicated in a more concrete and vivid manner. "Curriculum-based ideological and political education is embedded in disciplinary courses, practical courses, and general education courses, and during the teaching process, it is supported by the theoretical foundations of various disciplines, fully reflecting disciplinary characteristics and course-specific features. It emphasizes the seamless integration of ideological and political elements into instruction. Through this subtle and gradual process, it guides university students to cultivate sound ideals and beliefs, moral character, and value orientations, thereby constituting a form of implicit education [1]". By leveraging such digital resources, public elective courses transcend their traditional one-way function of knowledge transmission and gain broader space for value guidance. The establishment of digital resource repositories and online course platforms has significantly accelerated the updating pace and broadened the reach of ideological and political content. Consequently, the content boundaries of curriculum-based education have been continuously expanded, the capacity for ideological and political education provision has been strengthened, and the content ecosystem of curriculum-based education has become increasingly open and diversified.

2.2 Enhancing contextual experiential learning and emotional identification in ideological and political education

Virtual simulation and artificial intelligence technologies have enabled the creation of immersive learning environments for public elective courses. In these digital contexts, students no longer passively absorb value concepts; instead, they actively engage with ideological and political education content through interactive experiences, thereby fostering emotional identification and deeper identification. By establishing contextualized learning pathways, the ideological and political education component of public elective courses extends beyond cognitive understanding to emotional engagement, thereby enhancing the degree of value internalization [2]. The deployment of digital narratives and the construction of virtual scenarios transform abstract value concepts into concrete and perceivable embodied experiences. Consequently, the mechanisms for generating emotional identification receive strong technological support, the effectiveness and appeal of value guidance is substantially reinforced, and the psychological distance between students and the ideological and political content is markedly reduced.

(1) Promoting cross-domain co-construction and comprehensive sharing of ideological and political education resources

Digital platforms have dismantled resource barriers between institutions and academic disciplines, enabling high-quality ideological and political education resources to circulate more widely. Public elective courses, owing to their wide coverage and diverse student demographics, possess inherent advantages in the collaborative development and sharing of educational resources [3]. Under digital mechanisms, the collaborative development and integration of resources provide a sustained content supply for ideological and political education in public elective courses. The promotion of models such as cross-institutional course selection and MOOC-based resource sharing enables high-quality ideological and political education resources to overcome the supply limitations of individual institutions. Consequently, the scope and impact of resource utilization are substantially expanded, an inter-institutional collaborative framework for talent cultivation is gradually taking shape, and the constraints imposed by insufficient resources on ideological and political education in public elective courses are effectively alleviated.

(2) Enhancing the targeted provision of ideological and political education and its individualized adaptation

Data-driven analysis of student learning enables ideological and political education in public elective courses to design differentiated content tailored to students' diverse disciplinary backgrounds and cognitive levels. This precision-oriented approach addresses the uniformity problem inherent in traditional ideological and political education within public elective courses, thereby enhancing the relevance and appropriateness of value guidance and providing technical support for the development

of individual ideological and political literacy [4]. The continuous collection and analysis of learning behavior data make the dynamic adjustment of teaching strategies possible. As data accumulation increases, the level of individualized adaptation continues to improve, the technological foundation for differentiated education becomes increasingly robust, and students' development trajectories in ideological and political literacy can be continuously monitored and responded to through more precise educational interventions.

3. Practical Challenges in Ideological and Political Education for University Public Elective Courses in the Context of Digitalization

A clear value positioning does not guarantee the achievement of practical outcomes; currently, the ideological and political education within public elective courses still faces multiple structural constraints amid the digital transformation process. Identifying these challenges serves as a prerequisite for exploring optimal pathways, and contributes to improving the relevance and practical applicability of corresponding strategies.

3.1 Insufficient alignment between teaching objectives and the requirements of ideological and political education

The instructional objectives of public elective courses are often focused on expanding knowledge and cultivating personal qualities, whereas the requirements of ideological and political education have not been systematically integrated into these objective frameworks. Some instructors neglect the integration of ideological and political education content and lack systematic instructional planning for such integration, leading to a divergence between knowledge instruction and value guidance in their objective settings. This lack of alignment causes the application of digital tools to lose a clear educational purpose and value orientation [5]. The absence of ideological and political objectives in teaching syllabi further diminishes the consideration of educational functions within course design. Such fragmentation of objectives directly affects the systematic implementation of subsequent teaching practices, making it difficult for digital tools to focus on clearly defined value-oriented educational goals. As a result, the overall educational effectiveness of courses is significantly diminished, while the integration of educational objectives lacks the necessary institutional mechanisms and support.

3.2 Insufficient depth in the integration of resource development and ideological and political education content

In the development of digital resources, the primary focus is often placed on the multimedia presentation of specialized knowledge, while the integration of ideological and political elements frequently remains at a superficial and supplementary level. Public elective courses span a wide range of academic disciplines, and the ideological and political resources embedded within different courses require systematic exploration and meaningful integration. However, in current resource development practices, ideological and political content is often separated from disciplinary knowledge, and the depth and systematic nature of integration remain insufficient. Differences in resource developers' understanding of ideological and political elements make it difficult to establish unified integration standards, resulting in considerable variations in resource quality. Consequently, the alignment between resource provision and course-based educational objectives is significantly constrained. The transformation efficiency of high-quality ideological and political resources into teaching practices requires further improvement, and collaborative mechanisms for resource development and integration need to be further strengthened.

3.3 Inadequate matching between teaching activities and students' individual needs

Students enrolled in public elective courses come from diverse academic backgrounds, leading to marked differences in their approaches to understanding and their preferences for ideological and political education content. If digital teaching activity designs fail to account for these student-specific differences, a misalignment between instructional offerings and student needs can easily arise. While students hold diverse expectations regarding ideological and political education, uniformly structured activities often struggle to effectively address individual, differentiated needs. Furthermore, the design of interactive teaching segments frequently prioritizes form over substantive depth; this tendency toward superficial student participation diminishes the practical effectiveness of ideological and

political education. Consequently, both the appeal and efficacy of such teaching activities face significant challenges, and the pathway through which ideological and political content is transformed into students' value identification remains insufficiently developed, resulting in a notable lack of precision and relevance in instructional design.

3.4 Misalignment between evaluation methods and the measurement of ideological and political education outcomes

Current digital evaluation models for public elective courses primarily focus on knowledge acquisition and skill attainment, while lacking effective mechanisms for assessing the outcomes of ideological and political education. The formation and internalization of value systems are characterized by their long-term nature and covert progression; consequently, existing data collection and evaluation frameworks struggle to capture substantive changes in ideological and political literacy. This limitation in evaluation mechanisms deprives teaching improvement efforts of evidence-based feedback. Furthermore, inadequate capabilities for collecting and analyzing formative data further restrict the sensitivity and interpretive power of these evaluation models regarding educational outcomes. As a result, continuous improvement in ideological and political education lacks reliable evidentiary support and strategic guidance, the diagnostic and motivational functions of evaluation systems are therefore difficult to fully realize, and the overall explanatory power of evaluation frameworks is fundamentally constrained.

4. Optimal Pathways for Ideological and Political Education in University Public Elective Courses from a Digital Perspective

The objective existence of these challenges necessitates a systematic reconfiguration of strategic approaches, and digitalization offers viable solutions to address these issues. The following optimization strategies are formulated based on four dimensions, objectives, resources, teaching, and evaluation, with the aim of providing a practical action framework for the ideological and political education practices within university public elective courses.

4.1 Strengthening objective coordination and refining the design of ideological and political education

The inherent requirements of integrating ideological and political education into curriculum development require that the objectives of ideological and political education in public elective courses be embedded at the initial stage of course design, thereby establishing a coordinated framework in which knowledge objectives and value-oriented objectives are mutually integrated. Constructivist learning theory posits that learners actively construct the meaning of knowledge within authentic contexts; this theory provides a theoretical foundation for setting ideological and political objectives in public elective courses, namely, that such objectives should not be treated as external add-ons, but rather integrated into the very process of building course knowledge. The theory of value clarification further indicates that the formation of an individual's values involves a process of autonomous selection, reflection, and internalization; this offers another theoretical support for the organic integration of ideological and political objectives with knowledge objectives, specifically, that course design should afford students ample space to develop their value judgments. The "Contemporary China" ideological and political elective course at Hubei University of Economics adopts a collaborative teaching model featuring "multiple instructors for one course and joint classroom teaching by multiple instructors." University administrators, young faculty members, and renowned scholars jointly deliver lectures, creating a dialogue-based classroom environment, with more than 30 instructors rotating as lecturers each semester. The course utilizes the Rain Classroom platform to facilitate real-time interactive discussions through digital bullet comments, integrating current social issues into teaching activities in a timely manner. It has been recognized as a National First-Class Undergraduate Course. The course's mechanism for coordinating educational objectives provides a valuable reference for the digital design of ideological and political education in public elective courses.

4.2 Integrating high-quality resources and deepening the integration of ideological and political elements

Digital platforms create the technical infrastructure necessary for integrating high-quality

ideological and political education resources, both on and off campus, within public elective courses, with a particular focus on achieving deep integration between resource development and ideological-political elements. Relational learning theory posits that knowledge resides within network nodes, and the learning process involves establishing connections between these nodes; this theory provides an analytical framework for digital resource integration, namely that the incorporation of ideological-political elements should be realized through meaningful connections between knowledge nodes. Media convergence theory further demonstrates that the synergistic effect of diverse media formats can yield communication outcomes unattainable through any single medium; this offers theoretical guidance for the integrated development of multimodal ideological-political resources, suggesting that resource construction should leverage the convergent advantages of digital platforms across multiple media formats, including text, images, and audio-visual content. The general education elective course *A Century of Nankai University History and Culture* at Nankai University has systematically transformed institutional historical resources into pedagogical materials for ideological and political education: it reconstructed Zhang Boling's AI digital avatar and developed the "Boling Q&A" intelligent agent, comprising over 3,000 historical knowledge points. The course also incorporated modules such as "Campus Landmark Interpretation Activities" and "Oral History Practice on University Heritage". In 2025, the course was selected as an outstanding exemplary case of curriculum-based ideological and political education at Nankai University. Its resource integration approach demonstrates the practical potential of digital technologies in deepening the integration of ideological and political elements.

4.3 Developing precise student profiles and optimizing the matching mechanism between teaching resources and student demand

Digital tools provide data support for matching teaching resources with student needs in public elective courses, enabling instructional activities to be designed precisely according to learner profiles and learning characteristics. Learner-centered theory emphasizes that instructional design should be based on learners' characteristics and needs. This theory provides theoretical support for the application of precise learner profiling, indicating that the effectiveness of ideological and political education depends on an accurate understanding of students' cognitive foundations and value orientations. Furthermore, educational data mining theory indicates that learner behavior data contains deep insights reflecting students' cognitive states and emotional tendencies; this provides a methodological basis for constructing learner profiles, namely, that data-driven analytical techniques can reveal individual differences and group patterns in students' learning needs related to ideological and political education. Given that students in public elective courses come from diverse backgrounds, and their disciplinary expertise, cognitive foundations, and value orientations vary, it is essential to account for individual characteristics in instructional design. By leveraging digital platforms to collect learner behavior data, educators can analyze the acceptance preferences and comprehension challenges of different student groups regarding ideological and political content. Subsequently, by adjusting teaching strategies and resource distribution approaches, this approach can effectively address the misalignment between instructional supply and demand. Teaching activity designs grounded in precise profiling thus transform the ideological and political education in public elective courses from uniform indoctrination to differentiated guidance.

4.4 Improving evaluation mechanisms and establishing a closed-loop system for outcome monitoring

Evaluating the effectiveness of ideological and political education in public elective courses requires moving beyond the singular framework of knowledge assessment and instead establishing a multi-dimensional, process-oriented monitoring model. The fourth-generation evaluation theory posits that evaluation should transcend mere measurement and judgment, shifting toward negotiation and co-construction; this theory provides a new paradigm for evaluating the efficacy of ideological and political education, namely, that the evaluation process should focus on the dynamic process of students' value development rather than merely assessing static results.. Developmental evaluation theory further emphasizes the diagnostic and motivational functions of evaluation, asserting that its core value lies in fostering the continuous development of learners rather than simply assigning grades; this offers a theoretical foundation for establishing a closed-loop monitoring system for ideological and political education effectiveness, wherein the evaluation mechanism serves the dynamic needs of pedagogical improvement and student growth. The *Brush and Ink: Space and Time* general knowledge course on calligraphy, offered to university students nationwide by Linyi University, has evolved from in-person teaching to MOOCs and AI-powered courses. The course has established a knowledge graph and an

intelligent recommendation system, which leverages data collection to provide personalized learning path suggestions and targeted feedback. Integrating the "Six-Dimensional Ideological and Political Education" framework, the course employs digital handwriting recognition tools to implement formative assessment, thereby offering an practical and replicable technological model for monitoring ideological and political education outcomes in public elective courses.

5. Conclusion

From a digital perspective, optimizing the ideological and political education pathways for public elective courses in higher education institutions requires systematic implementation across four key dimensions: objectives, resources, teaching practices, and evaluation. Strengthening objective coordination ensures that the direction of educational development remains aligned; integrating high-quality resources promotes deeper integration of educational content and ideological and political elements; developing precise learner profiles and analyzing supply-demand relationships enhance the match between teaching provision and student needs; and improving evaluation mechanisms establishes a closed-loop system for monitoring educational effectiveness. Practical explorations in certain universities have demonstrated that digital platforms and data-driven approaches provide feasible approaches and practical solutions for ideological and political education in public elective courses. Future research may continue to focus on differentiated implementation pathways for elective courses across various disciplines, as well as the sustained impact of the evolution of digital technologies on ideological and political education models. These efforts will promote the development of ideological and political education in public elective courses toward greater precision, sustainability, and institutionalization, thereby providing continuous support for the high-quality development of ideological and political education in higher education.

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