RESEARCH ARTICLE

Teaching Practice of Ideological and Political Education in Curriculums of Artificial Intelligence Major

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Abstract

This paper focuses on the ideological and political education in artificial intelligence (AI) specialized courses. A fusion model characterized by knowledge height (disciplinary expertise), knowledge temperature (value orientation) and knowledge length (holistic education) is constructed, emphasizing the organic unity of knowledge transmission and value cultivation. Firstly, through cross-team collaboration, a tripartite educational team comprising disciplinary instructors, ideological and political educators, and student counselors is established, alongside a collective lesson-planning mechanism. Secondly, via pedagogical integration, the objective of socialist core values is operationalized and decomposed into course syllabi, through diverse approaches including case studies, interactive discussions, and digital tools. Finally, through assessment innovation, ideological and political goals are embedded into the full-cycle evaluation system spanning in-class performance to final examinations. Long-term practice demonstrates that this model has significantly enhanced students' learning motivation and comprehensive competence, offering an all-participant, full-process comprehensive ideological and political education system.

Keywords: artificial intelligence, specialized courses, ideological and political education in curriculums.

1 Introduction

University education shoulders the significant mission of imparting knowledge and transmitting cultural ethos. Artificial Intelligence (AI), as one of the most vibrant fields in contemporary academia, offers specialized courses that serve as primary platforms for knowledge dissemination in higher education [1]. These courses inherently contain rich, implicit resources for ideological and political education. Their advantages in terms of audience size and instructional time allocation provide a natural and favorable platform for realizing the educational function of ideological and political instruction. For future high-tech talents who will master AI technologies, strengthening value guidance alongside knowledge transmission not only adds a dimension to education but also makes the specialized knowledge more resonant and deeply ingrained [2].

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The research team is centered on the fundamental task of fostering virtue and cultivating talents, using specialized course classrooms as the main carrier. The group established a tripartite teacher team consisting of specialized course instructors, dedicated ideological and political education teachers, and counselor teachers. The construction of curriculum-based ideological and political education is treated as a complex systemic project, approached with serious commitment and dedicated research. This effort aims to enhance the ideological-political awareness and pedagogical skills of specialized course instructors, achieve an organic and lasting integration of specialized knowledge points with ideological-political elements, and ensure that the educational process is subtle, solid, and effective, thereby forging a new path in the development of curriculum-based ideological and political education for AI Major in the new era. To achieve the goals of ideological and political education for AI courses, the research group revised the talent cultivation plan, clarified professional competencies and core ideological-political literacy, aligned them with socialist core values, and defined corresponding arrays of knowledge, abilities, and ideological-political elements. Years of practice have shown marked improvement in the knowledge, skills, and ideological-political qualities of both teachers and students [3].

2 Main Content and Research Approach

2.1 Constructing a Comprehensive, Multi-role Participatory Excellent Teacher Team

Curriculum-based ideological and political education is not the responsibility of a single course or instructor. It requires the formation of an organic whole involving the university level, the departmental level, students, course instructors, and ideological-political education teachers, all collaborating to advance the initiative.

2.2 Creating a New Curriculum Form Closely Integrated with Ideological and Political Education

It is essential to propose the ideological and political education objectives, tasks, and requirements for the courses, refine socialist core values into specific curriculum educational goals, and genuinely decompose and implement them into teaching plans, instructional designs, and lesson plans.

2.3 Exploring Instructional Methods for Curriculum-based Ideological and Political Education that Meet the Demands of the New Era

A combination of methods such as theoretical exposition, case analysis, group discussion, and Q&A sessions should be employed. Utilizing formats like PPT, audio-video materials, and animations, the ideological and political education elements embedded in the course content should be deeply interpreted. This approach facilitates the transition from explaining specialized knowledge points to educating and guiding students in forming correct worldviews, outlooks on life, and values, thereby unifying knowledge transmission with value shaping and ability enhancement.

2.4 Designing Effective and Scientific Evaluation Criteria

The improvement of students' ideological and moral quality should be a key objective in course assessment. Ideological and political education elements must be included as critical knowledge points in course evaluations, implemented across various stages such as classroom tests, practical processes, homework assignments, mid-term checks, final examinations, and graduation projects. Assessment methods should be innovated by incorporating case analyses, scenario designs, and essay questions to scientifically and effectively evaluate the achievement of the course's ideological and political education goals. Importantly, this evaluation is bidirectional, encompassing both teacher assessment of students and student evaluation of teachers [4].

2.5 Opening Channels for Extending Curriculum-based Ideological and Political Education from the Classroom to After-class and Extracurricular Activities

Post-class extensions should include both natural extensions of knowledge itself and logical extensions that combine knowledge with ideological-political reflections. Furthermore, based on guiding students to understand classroom knowledge and ideological-political principles, seamless extensions should be made to extracurricular activities like science and technology competitions [5].

The approach is to strengthen top-level planning and overall design, streamline processes, clarify divisions of labor, and collaborate effectively. The university level provides overall planning,

while the departmental level actively promotes implementation. Institutionally, it must be stipulated that ideological-political construction must be included in the content of university development and departmental/program construction. Within departmental teaching work, various systems and incentive/disincentive measures should be formulated and refined. This provides specialized course instructors with institutional guidelines, methodological support, and a combination of pressure and motivation when designing curriculum-based ideological and political education, ensuring the work is genuinely implemented. Policies should favor outstanding teachers in curriculum-based ideological and political education while also providing impetus for those needing improvement. Based on the overarching goal of fostering virtue and cultivating talents through departmental/program construction, a reverse-design approach is applied to the top-level framework of departmental ideological-political construction, identifying pain points, adjusting policies, and promoting development. Regular teaching and research activities should be conducted to provide strong support for all aspects of departmental/program construction.

3 Research Steps

3.1 Construction of a Comprehensive Personality Knowledge Dimension Model

The theoretical foundation of this project lies in constructing a comprehensive personality knowledge dimension model. The ideological-political resources of specialized courses rely on specialized knowledge. Conducting ideological-political education alongside imparting specialized knowledge can enhance the power and credibility of value guidance, thereby enriching knowledge transmission across three interconnected dimensions: the Height (H), Temperature (T), and Length (L) of knowledge.

Specifically, *Height* (H) refers to knowledge-based education—the depth and rigor of specialized disciplinary knowledge that cultivates high-level professional competence. *Temperature* (T) refers to ideological-political education—ensuring that cultivated talents are not cold, detached individuals but rather individuals who love the Party, the country, and society. *Length* (L) refers to holistic, longitudinal education—fostering virtue and cultivating talents, producing well-rounded individuals with both knowledge and skills and excellent political quality, who remain reliable builders and successors over the long term.

The three dimensions are not independent but mutually reinforcing. The overall educational quality of a comprehensive AI professional, denoted Q_A, is modeled as a weighted integration of all three dimensions:

$$Q_A = w_H \cdot H_K + w_T \cdot T_P + w_L \cdot L_C \tag{1}$$

where H_K, T_P, and L_C represent the levels of knowledge-based education, ideological-political education, and holistic (longitudinal) education, respectively; w_H, w_T, and w_L are the corresponding weight coefficients, satisfying $w_H + w_T + w_L = 1$, with $w_H, w_T, w_L > 0$. In practice, the specific values of these weights may be determined through expert consultation or curriculum-level needs assessment, and are expected to be approximately balanced to reflect the principle of organic unity between knowledge transmission and value cultivation [6, 7].

It is evident that only through curriculum-based ideological and political education—which seamlessly integrates knowledge-based and ideological-political education—can the goal of holistic comprehensive education be fully achieved. From a teaching effectiveness perspective, this approach manifests the educational value of specialized courses, achieves an integration of science and philosophy, allows students to perceive the ‘temperature’ of knowledge while mastering specialized content, and forms a positive interaction among specialized knowledge, values, and philosophical perspectives.

From a teaching effectiveness perspective, "curriculum-based ideological and political education" manifests the educational value of specialized courses, achieves an integration of science and philosophy, allows students to perceive the ’temperature’ of knowledge while learning specialized content, triggers deeper reflection and insight, and forms a positive interaction and cycle between specialized knowledge, values, and philosophical perspectives.

"Curriculum-based ideological and political education" enhances the teaching effectiveness and quality of courses, possesses a degree of universality and promotional value, is easily adaptable by other courses, and is conducive to fully leveraging the combined educational effect of ideological-political education and specialized course teaching.

In terms of outcomes, permeating socialist core

values throughout the classroom, and constructing an integrated online-offline, theory-practice teaching model, has effectively stimulated students' learning enthusiasm, tapped their potential for autonomous learning, cultivated their innovation capabilities and spirit, and improved teaching effectiveness and talent cultivation quality.

If the pilot implementation of this course proves successful, the next step involves constructing a comprehensive ideological and political education system involving all participants and the entire process, extending it to the entire AI major and radiating to the whole university. Efforts will further broaden perspectives, improve and innovate teaching content and methods, striving to cultivate a new generation of socialist builders and reliable successors with comprehensive development in moral, intellectual, physical, aesthetic, and labor education, who are "ethical, disciplined, skilled, honest, and grateful".

3.2 Practice of Curriculum-based Ideological and Political Education in AI Major Courses

3.2.1 *Building a Comprehensive, Multi-role Participatory Excellent Teacher Team*

We established a curriculum education team led by specialized course instructors, with participation from key ideological and political theory teachers from the Marxism School, student counselors, student affairs departments (graduate affairs departments), relevant schools/departments, and student representatives. A collective lesson preparation system was implemented, involving specialized course instructors alongside ideological-political education workers such as ideological and political theory teachers and counselors. Establish a comprehensive, three-dimensional system where specialized course instructors lead lectures, assisted by ideological and political theory teachers and counselors who attend and support [8].

3.2.2 *Seeking Methods Suitable for Close Integration of AI Major Courses and Ideological-Political Education in Courses*

We adhered to dialectical materialism and historical materialism, and thoroughly promote the integration of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era into teaching materials, classrooms, and students' minds. Based on the characteristics of the major and course content, deeply research the ideological and moral quality requirements in the professional training specifications and the ideological and political education resources inherent in the courses. Propose the ideological and political education objectives, tasks, and requirements for the course, refine socialist core values into specific curriculum educational goals, and decompose and implement them into teaching plans, instructional designs, and lesson plans. Due to the particularity of the specialized courses taught in the AI major, the ideological and political education theoretical level and teaching skills of specialized course instructors are generally weaker compared to teachers from ideological and political education or related social science backgrounds. The teaching of AI Major tends to focus more on specialized theoretical learning and knowledge application, making the integration of ideological and political education into the courses relatively challenging. Therefore, a common issue in electronic/engineering-type specialized courses is the insufficient integration of specialized education and ideological-political education. Thus, enhancing the ideological-political education capabilities of specialized course instructors and motivating their active participation in curriculum-based ideological and political education reform is a key issue in the top-level design of such education for the AI major. When conducting top-level design for ideological-political construction within the AI major, planning should center around this key issue [9].

3.2.3 *Adopting Instructional Methods for Ideological-Political Education that Meet the Needs of the New Era in Classroom Teaching*

The core professional courses within the curriculum system are shown in Figure 1. Vigorously promote classroom teaching reform aimed at curriculum-based ideological and political education, fully excavate and utilize the ideological-political education elements and functions inherent in specialized courses, and achieve the organic unity of ideological-political education and knowledge system education. Comprehensively employ methods such as theoretical exposition, case analysis, group discussion, and Q&A, utilizing formats like PPT, video, and animation to deeply interpret the ideological-political education elements contained within the courses, transitioning from explaining specialized knowledge points to educating and guiding students in forming correct worldviews, outlooks on life, and values, thereby unifying knowledge transmission, value shaping, and ability enhancement. Due to the pandemic, online teaching platforms represented by China's MOOC, Rain Classroom, DingTalk, Tencent Classroom,

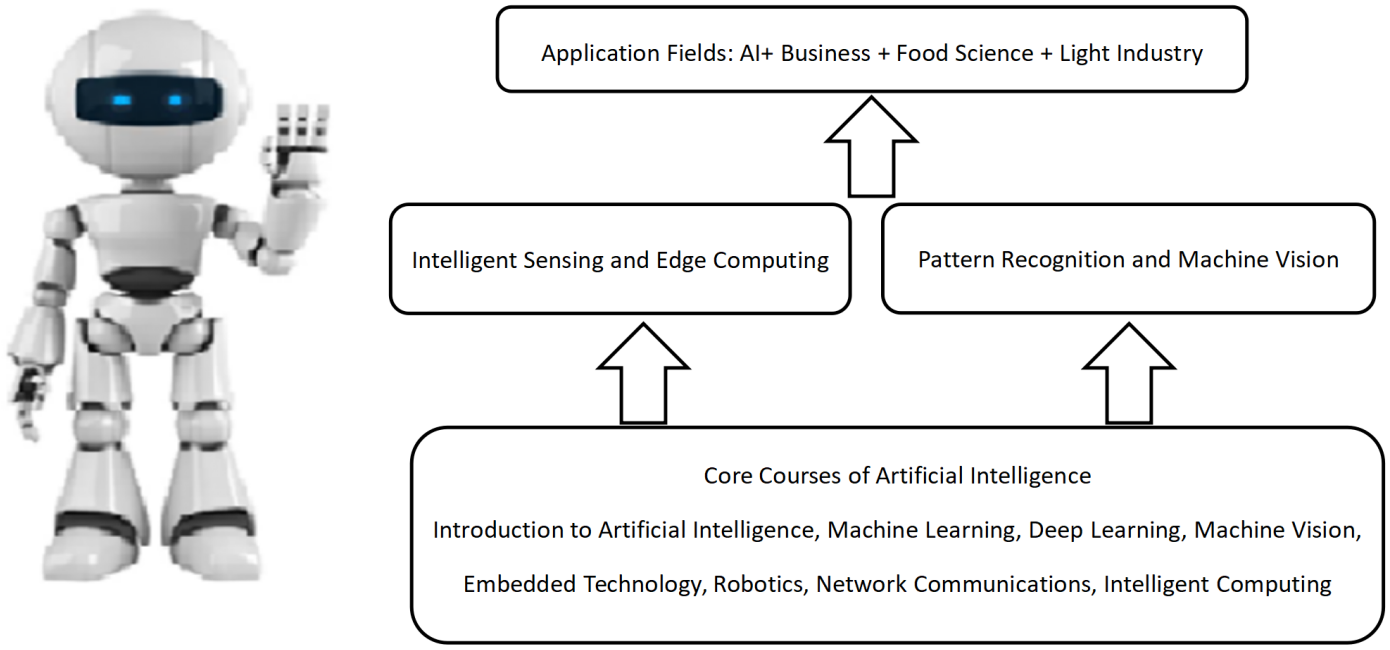


Figure 1. Curriculum architecture diagram.

Tencent Meeting, and Superstar Learning Link have rapidly risen, demonstrating excellent convenience, extensiveness, balance, and interactivity. They have broken the multidimensional limitations of traditional education in time, space, audience, and region, and also show obvious advantages in the richness of course expansion resources and the diversity of teaching modes. However, conducting such large-scale, long-duration, and comprehensive online teaching has gradually revealed problems such as insufficient network hardware facilities, lagging construction of digital teaching materials and learning resources, inadequate software and information literacy among teachers, lack of online teaching experience, and difficulties in controlling the online teaching process. Courses with strong theoretical content requiring extensive formula derivation and highly practical courses have been particularly constrained, affecting the quality and efficiency of online education to some extent [10].

3.2.4 Innovatively Designing Effective Evaluation Criteria

Course evaluation is essential in teaching, as it can guide the course's direction and monitor its quality. Therefore, it is necessary to establish a set of scientific and effective evaluation criteria for communication engineering courses under the framework of curriculum-based ideological and political education, to incentivize and diagnose the effectiveness of the teaching process. The improvement of ideological and moral quality should be a key objective in course assessment. Ideological-political education elements must be included as critical knowledge points for assessment, implemented in classroom tests, homework assignments, mid-term checks, and final examinations. Innovate assessment methods by combining case analysis, scenario design, and essay questions to scientifically and effectively evaluate the achievement of the course's ideological-political education goals.

4 Conclusion

Years of research and exploratory practice have revealed that constructing curriculum-based ideological and political education for specialized courses, based on comprehensive education, is a complex and enduring systemic project. It encompasses a multidimensional realization model integrating online and offline, theory and practice. Existing experience shows that permeating socialist core values throughout classroom and extracurricular activities has effectively stimulated students' learning enthusiasm, tapped their potential for autonomous learning, cultivated their innovation capabilities and spirit, and improved teaching effectiveness and talent cultivation quality. Building on this foundation, future efforts will further broaden perspectives, improve and innovate teaching content and methods, and advance a talent cultivation model that fosters comprehensive innovators with ideals, capabilities, and a sense of responsibility. The goal is to construct a comprehensive ideological and political education system involving all participants

and the entire process, extending it to all specialized courses within the AI major and radiating to the entire school or university, striving for genuine comprehensive education and cultivating a new generation of long-term, reliable socialist builders and successors with comprehensive development in moral, intellectual, physical, aesthetic, and labor education.

In summary, centered on the fundamental task of fostering virtue and cultivating talents, and using specialized course classrooms as the main carrier, we have constructed a tripartite teacher team comprising specialized course instructors, dedicated ideological and political education teachers, and counselor teachers. By treating the construction of curriculum-based ideological and political education as a complex systemic project, engaging in earnest study and dedicated research, we have enhanced the ideological-political awareness and pedagogical level of specialized course instructors, achieved an organic and lasting integration of specialized knowledge points with ideological-political elements, ensured that the educational process is subtle, solid, and effective, and realized positive outcomes in the construction of curriculum-based ideological and political education for AI Major in the new era.

Data Availability Statement

Data will be made available on request.

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Conflicts of Interest

The authors declare no conflicts of interest.

AI Use Statement

The authors declare that no generative AI was used in the preparation of this manuscript.

Ethical Approval and Consent to Participate

Not applicable.

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