

Exploring the Pathways of Generative Artificial Intelligence in Reshaping the Ideological and Political Education Ecosystem in Universities

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Abstract: With the explosive development of generative artificial intelligence technology, the ecosystem of ideological and political education in universities faces both opportunities and challenges for systematic transformation. This paper adopts the logical framework of "technology empowerment-ecosystem adaptation-risk regulation." First, it defines the technical attributes of generative AI and the constituent elements of the ideological and political education ecosystem (educators, learners, educational content, and educational environment), analyzing the influence mechanisms of technology on each element. Second, through theoretical analysis and practical observations, it explores the advantages of generative AI in innovating the presentation forms of ideological and political education content, optimizing teaching methods, and achieving precise service evaluation, while also revealing its associated risks such as information security threats, value orientation deviations, teacher-student relationship alienation, and challenges in teacher role transformation. Finally, from three dimensions—technology research and safety safeguards, innovation in teaching and learning models, and improvement of management mechanisms—it proposes specific strategies: enhancing university-research collaboration for adaptive technology development, constructing an interactive inquiry-based teaching model centered on students, and establishing robust ethical review and university-government-enterprise collaborative mechanisms. This study aims to provide theoretical references and practical guidance for resolving conflicts in technology application and promoting high-quality development of the ideological and political education ecosystem in universities, thereby supporting the fundamental task of fostering virtue through education.

Keywords: Generative Artificial Intelligence, Ideological and Political Education, Educational Ecology

1. Introduction

In recent years, generative artificial intelligence (GenAI) has entered a period of rapid development. Large language models (LLMs) such as ChatGPT and ERNIE Bot have achieved significant breakthroughs in the field of natural language processing, propelling artificial intelligence from "perceptual intelligence" to "generative intelligence." As of June 2024, GenAI products in China have attracted 230 million users (accounting for 16.4% of the total population). Their applications have expanded from consumer-facing to industrial sectors, permeating multiple fields. Additionally, GenAI supports the digital transformation of education by facilitating the development of teaching resources, personalized learning, and intelligent tutoring[1].

As a core vehicle for fostering virtue and nurturing talent, ideological and political education in universities is now facing challenges and opportunities brought about by digital technological transformation. The traditional ecosystem of ideological and political education lags behind in concepts, models, resource allocation, and teacher-student interaction, making it difficult to meet the diverse needs of "digital natives"—a generation that accesses information in fragmented ways, thinks more critically, and demands greater adaptability and effectiveness in ideological and political education. Meanwhile, GenAI presents an opportunity to reshape this educational ecosystem, driving the transformation of educational philosophy toward a balance between "value guidance and ability cultivation," upgrading teaching methods to "interactive inquiry," optimizing resource allocation for "precise adaptation," and restructuring teacher-student relationships into "collaborative symbiosis," thereby enhancing educational quality and efficacy.

This study focuses on the integration of GenAI with the ideological and political education ecosystem in higher education, holding both theoretical and practical significance. Theoretically, it can fill the research gap in the interdisciplinary field, enrich the theory of technological empowerment in ideological and political education, and provide new perspectives for subsequent research. Practically, it offers applied guidance for educators, clarifies technological application scenarios and pathways, constructs quality improvement plans, and aids in cultivating a new generation of individuals with firm ideals and beliefs, innovative capabilities, and the ability to contribute to the Chinese dream.

2. Overview of generative artificial intelligence and the ecological environment of ideological and political education in universities

2.1 Connotation and characteristics of generative artificial intelligence

Generative AI, as a core branch of artificial intelligence, is based on algorithms, models, and rules, and relies on machine learning technology to learn from large-scale multimodal datasets. It can generate new content such as text, images, audio and video, and code [2]. Unlike traditional artificial intelligence that focuses on analyzing and processing existing data, its core lies in creating new information: simulating human cognitive patterns through deep learning algorithms, extracting features and patterns from massive data, and generating content that meets specific needs. Generative artificial intelligence has three significant characteristics: first, strong data-driven, relying on large-scale high-quality data training. The size and quality of the data directly determine the performance of the model and the quality of the generated content. Through learning from data such as text and images, pattern patterns can be mastered, and logical and coherent content can be generated; The second is high creativity, which can break through imitation and replication, generate new and unique content, and can assist in the generation of works such as painting and music in the field of artistic creation; The third is real-time, which can quickly generate content based on user input, achieving real-time interaction and instant information supply. In the field of education, its application potential is outstanding: it can quickly generate teaching resources such as lesson plans, courseware, exercises, etc., saving teachers' preparation time and enabling them to focus on teaching design and student guidance; Being able to provide personalized learning content and paths based on student learning data, achieving personalized teaching according to individual needs; It can also be used for intelligent tutoring and answering questions, responding to students' needs in real-time and enhancing the learning experience.

2.2 The constituent elements and characteristics of ideological and political education ecology in universities

The ecology of ideological and political education in universities is an organic system formed by the interaction of elements such as educators, learners, educational content, and educational environment. Among them, educators, as organizers and guides of activities, cover groups such as ideological and political teachers and counselors, and undertake the responsibilities of theoretical imparting and value guidance; The learners, namely college students, have individual differences in their ideological concepts, value orientations, and dynamically develop during the educational process; The educational content focuses on core ideas such as Marxist theory and the theoretical system of socialism with Chinese characteristics, and its scientific, contemporary, and targeted nature directly affects the effectiveness of education; The educational environment includes multi-dimensional factors such as school, family, society, and network environment, campus culture, family atmosphere, social development trends, and network information dissemination, which jointly affect the ideological and behavioral behavior of college students. This ecosystem has the characteristics of systematicity, dynamism, and openness: systematicity is reflected in the deep correlation between various elements, educators influence learners through educational content and methods, learners feedback and react to educational strategy adjustments, and the educational environment provides support for activity development; The dynamism is manifested as the iteration of ecological elements driven by changes in educational concepts, technology, and college students' thoughts and behaviors as society develops and educational reforms advance; Openness refers to the continuous exchange of material, energy, and information with the external environment, which requires both absorbing new social achievements to update educational content and nurturing qualified talents to contribute to social development.

2.3 Impact mechanism of generative artificial intelligence on the ecology of ideological and political education in universities

Generative artificial intelligence empowers various core elements of the ideological and political education ecosystem in universities through technology: at the level of educators, it relies on intelligent lesson preparation systems to generate teaching plans, courseware, and other resources, uses intelligent tutoring systems to share the pressure of answering questions, and uses data analysis to support teaching decisions, helping educators optimize teaching strategies [3]; At the level of learners, personalized learning plans are customized based on learning data, adaptive resources are pushed through intelligent platforms, and immersive scenarios are constructed using technologies such as virtual reality to enhance learning motivation; For educational content, it can quickly generate materials such as current affairs cases and hot topic analysis, optimize content based on student feedback, and promote knowledge sharing and innovative thinking stimulation; In terms of educational environment, it creates positive online public opinion through intelligent recommendation algorithms, filters out harmful information through intelligent supervision systems, and promotes the integration of online and offline environments, expanding the boundaries of education time and space. On this basis, generative artificial intelligence has systematically reshaped the ideological and political education ecosystem: it not only promotes the renewal of educational concepts, but also shifts educators from knowledge transmitters to learning guides, and promotes the transformation of educational models from single classroom teaching to diverse interactive teaching. It also optimizes the allocation of educational resources, breaks the limitations of time and space to achieve efficient sharing, and overall enhances the pertinence and effectiveness of ideological and political education.

3. Opportunities and challenges for generative artificial intelligence to reshape the ecology of ideological and political education in universities

3.1 Opportunities

3.1.1 Innovative forms of educational content presentation

Generative artificial intelligence can transform abstract ideological and political education theories into vivid and attractive content forms [4]. Taking ideological and political education courses with historical themes as an example, through generative artificial intelligence technology, realistic virtual historical scenes can be constructed, allowing students to feel as if they are in a specific historical period and personally experience the occurrence and development of historical events. For example, when telling about the founding of the CPC, virtual reality (VR) and augmented reality (AR) technologies are used to generate a three-dimensional virtual scene of the site of the First National Congress of the Communist of China, where students can freely shuttle, interact with virtual historical figures, understand the ideological collision and struggle of the early founders of the country, so that students can more deeply understand the historical background and significance, and enhance their understanding and memory of theoretical knowledge.

In terms of knowledge graph construction, generative artificial intelligence can integrate massive amounts of ideological and political education related knowledge, presenting dispersed knowledge points in a structured and visual manner. Taking the Marxist theory course as an example, by generating an intelligent knowledge graph, the core contents of Marxist philosophy, political economy, and scientific socialism, as well as their inherent logical relationships, are clearly displayed. Students can click on nodes in the graph to gain a deeper understanding of the detailed content and related cases of each knowledge point. This intuitive presentation helps students establish a systematic knowledge system, grasp the overall framework and internal connections of knowledge, and improve learning effectiveness.

3.1.2 Optimizing education and teaching methods

The AI digital assistant created with the help of generative artificial intelligence technology can provide 24-hour online Q&A and instant learning support for students. When students encounter difficulties in understanding concepts or doubts about theoretical applications during the process of studying ideological and political education courses, they can ask AI digital assistants questions at any time [5]. AI digital assistant can quickly generate detailed and accurate answers based on the type and difficulty of the problem, and provide relevant cases and expansion materials to help students deepen their understanding. When studying the core socialist values, students may not have a deep understanding of the connotation of "dedication". AI digital assistants can combine typical deeds from different

professions, such as doctors saving lives and helping the injured, teachers educating and nurturing students, and researchers dedicating themselves to research, to vividly illustrate the specific manifestations and important significance of "dedication", meet students' personalized learning needs, and improve their learning enthusiasm.

Generative artificial intelligence can also be used to conduct virtual practical activities, providing students with immersive learning experiences. For example, in carrying out patriotic education, generative artificial intelligence is used to create a virtual patriotic education base. Students can immerse themselves in the exhibition, cultural relics, etc. in the base by wearing VR devices, and feel the influence of patriotic spirit. In virtual practice activities, interactive elements can also be set up, such as allowing students to participate in decision-making of simulated historical events. By choosing different action plans, students can understand the development, changes, and impacts of historical events, enhance their sense of participation and responsibility, and cultivate their practical abilities and innovative thinking.

3.1.3 Precision education services and evaluation

By analyzing the large amount of data generated by students during the learning process, generative artificial intelligence can gain a deep understanding of students' learning habits, interests, knowledge mastery, and ideological dynamics, thus constructing accurate personalized portraits for students. Taking the ideological and political education course of a certain university as an example, a learning platform is used to record students' course visit time, reading material preferences, topics and frequency of participation in discussions, and other data. Using generative artificial intelligence data analysis algorithms, these data are mined and analyzed to generate personalized portraits of each student. Based on the portrait, the system can push ideological and political education content that meets students' interests and needs, such as recommending relevant academic papers, current affairs news, case analysis, etc., to improve the pertinence and attractiveness of educational content and meet students' personalized learning needs.

Generative artificial intelligence can also generate visual growth curves based on students' learning data, intuitively demonstrating the progress and changes of students in the process of ideological and political education learning. By examining students' growth curves, teachers can timely understand their learning status and development trends, and discover the problems and difficulties that students face in learning, such as lagging learning progress and weak knowledge mastery. In response to these issues, teachers can adjust their teaching strategies, provide personalized tutoring and support for students, help them overcome difficulties, and improve learning outcomes. At the same time, the visualized growth curve also provides students with a basis for self-evaluation and reflection. Students can clearly see their learning achievements and shortcomings, and adjust their learning plans and methods accordingly to promote their comprehensive development.

3.2 Challenge

3.2.1 Information security and privacy protection issues

The application of generative artificial intelligence in ideological and political education in universities faces multiple risks of privacy leakage, and there are obvious shortcomings in students' awareness of privacy protection. In the entire lifecycle of data, risks run through the stages of collection, storage, and use: during the collection stage, if educational institutions lack standardized supervision, they are prone to excessive collection of students' personal basic information, academic performance, ideological dynamics, and other data. Some educational platforms do not clearly inform students of the purpose, scope, and method of data use, resulting in students' privacy rights being compromised without their knowledge; In the storage stage, if the security protection measures of the storage system are insufficient, the security loopholes of the university education management system may be exploited by hackers, causing the disclosure of sensitive information such as students' names and ID number numbers, causing security threats; During the usage phase, improper management of data permissions may lead to data abuse. Some educational institutions use data for commercial purposes or share it with third parties without the consent of students, seriously infringing on privacy rights. At the same time, students' awareness of privacy protection is generally weak, and their awareness of the importance of personal data is insufficient. When using educational applications and platforms, they often arbitrarily agree to privacy terms, ignore potential risks, and even check the consent option without hesitation for the convenience of using the service. They lack understanding of the content and consequences of the terms; In the online environment, there is also a lack of self-protection awareness, which makes it easy to leak personal information on social media platforms, learning forums, and other scenarios, providing

opportunities for criminals to take advantage of.

3.2.2 Value orientation deviation risk

The training of generative artificial intelligence relies on a large amount of data, and if there are quality issues with this data, such as incorrect information, biased views, or negative values, it may lead to the transmission of incorrect value orientations in the content generated by generative artificial intelligence. In the field of ideological and political education, if there are incorrect interpretations of historical events, one-sided analyses of social phenomena, or distortions of mainstream values in the training data, the content generated by generative artificial intelligence may mislead students and interfere with the formation of their correct values. Some training data may be influenced by specific ideologies or interest groups, intentionally spreading false information or erroneous ideas. If generative artificial intelligence learns these data, it will transmit these negative contents to students, which will have a negative impact on their thinking.

The content generated by generative artificial intelligence may have problems with vague values and unclear positions, which can confuse students when facing complex value conflicts and make it difficult to make correct value judgments. In discussions involving social hot topics, the viewpoints generated by generative artificial intelligence may lack depth and critical thinking, failing to guide students to think deeply about the essence of the problem and instead leaving them confused. Partial generative artificial intelligence provides ambiguous answers to moral and ethical questions, unable to provide clear value guidance for students, which is not conducive to the construction of students' moral concepts and value systems.

3.2.3 Alienation of human-machine relationship and dilemma of teacher role transformation

The excessive application of generative artificial intelligence poses multiple challenges to the interaction dimension between teachers and students in the ideological and political education ecology of universities: firstly, the main position of teachers and students faces the risk of weakening. If teachers overly rely on AI digital assistants to provide knowledge explanations and answer questions, they may lose their dominant role in the teaching process and become resource providers; If students overly rely on AI to obtain answers, they will gradually weaken their ability to think independently and explore, while reducing their trust in teachers, thereby cutting off the teacher-student interaction chain. In some ideological and political courses in universities, teachers overly rely on AI to generate teaching content and design activities, leading to a lack of personalized adaptation in teaching and directly causing a decline in student satisfaction with the course. Secondly, there is a possibility of weakening the emotional connection between teachers and students. The educational value of ideological and political education relies on emotional resonance, and although AI can provide information and knowledge support, it cannot replace teachers' emotional care. When students face learning difficulties, ideological confusion, or psychological pressure, teachers' words and deeds and emotional guidance can provide spiritual support and help students build confidence. However, AI is difficult to accurately perceive and respond to students' emotional needs, and long-term application can easily lead to alienation between teachers and students, weakening the effectiveness of ideological and political education in educating students. Thirdly, the transformation of teacher roles faces adaptation challenges. In the era of generative artificial intelligence, teachers need to shift from traditional knowledge transmitters to learning guides, innovative thinking cultivators, and value leaders. This requires teachers to have the ability to integrate technology, screen and integrate resources, and evaluate content. However, some teachers currently lack technical knowledge and interdisciplinary application abilities, making it difficult to effectively screen massive AI generated resources. Additionally, their information literacy and critical thinking still need to be improved, and they need to break through the bottleneck of role transformation through systematic training.

4. Path strategy for generative artificial intelligence to reshape the ecology of ideological and political education in universities

4.1 Technical aspect: Strengthen technology research and application innovation to ensure data security

To promote the deep integration of generative artificial intelligence and ideological and political education in universities, it is necessary to build a collaborative system from three aspects: technology research and development, scenario innovation, and security guarantee. At the level of technology research and development, it is necessary to promote the establishment of a collaborative mechanism

between universities and research institutions, rely on the practical experience and faculty advantages of ideological and political education in universities, combine the technical research and development capabilities and talent reserves of research institutions, focus on the development of adaptive technologies for ideological and political education needs, such as developing an intelligent tutoring system based on sentiment analysis. By analyzing students' language expression and emotional state, it can accurately locate ideological confusion and emotional needs, and provide personalized support; At the level of scene exploration, it is necessary to fully tap into the potential of technology to expand application boundaries, and use the integration of virtual reality (VR), augmented reality (AR), and generative artificial intelligence to build an immersive learning environment. For example, in modern history teaching, realistic historical scenes can be generated to enhance students' emotional resonance and learning experience. At the same time, intelligent debate activities can be carried out, and the system can generate challenging topics based on students' knowledge level to cultivate critical and dialectical thinking; At the level of security assurance, it is necessary to establish a full process data management system, and the collection process should follow the principle of "minimum necessity", only obtaining teaching related data; The storage process uses encryption technology to protect sensitive information and restrict authorized access; Establish a hierarchical access control mechanism in the usage process, clarify permission boundaries, and strengthen data security awareness education for teachers and students. Through special lectures, training, and security drills, popularize privacy protection knowledge and risk response skills, and enhance their data security protection capabilities.

4.2 Education and teaching level: Innovative AI empowers ideological and political education, enhances teachers' digital literacy, and improves the intelligent teaching evaluation system

In educational practice, it is necessary to build a student-centered teaching system supported by generative artificial intelligence. On the one hand, innovative interactive and inquiry based teaching models should be developed, and diversified teaching activities should be designed based on technology. When conducting group cooperative learning, generative artificial intelligence should be used to match personalized tasks and resources for each group, guiding students to explore problems and cultivate teamwork abilities in collaboration; When organizing inquiry based learning, teachers ask inspiring questions, and students use technical tools to collect and analyze data, independently exploring answers to enhance self-directed learning and innovative thinking. At the same time, using generative artificial intelligence to generate case studies, scenario simulations, and other materials, such as creating moral dilemma scenarios when explaining socialist core values, helps students deepen their theoretical understanding; Build an online learning community to promote interaction and communication between teachers and students, and expand the dimensions of learning.

On the other hand, focusing on the improvement of teachers' digital literacy and teaching ability, a hierarchical training system is constructed: the training content covers the principles of generative artificial intelligence, tool usage, and integration strategies with ideological and political education, and invites technical experts and educational scholars to teach in a "theory+practice" mode; Through workshops, teachers can perceive the advantages and disadvantages of technology and optimize application paths in practice. Meanwhile, teachers are guided to utilize technology to optimize teaching design and evaluation processes: developing personalized plans based on teaching objectives and student needs, employing technology to analyze learning data (e.g., online learning duration and discussion participation), and dynamically adjusting teaching strategies.

In addition, improve the teaching evaluation system and construct a diversified and process oriented evaluation framework: the evaluation content takes into account comprehensive qualities such as knowledge mastery, learning attitude, and innovative thinking, and the evaluation subjects cover teacher evaluation, student self-evaluation, and peer evaluation, achieving multi-dimensional feedback; Based on generative artificial intelligence, precise evaluation is carried out by analyzing data such as homework, exams, and classroom performance to identify students' weak areas of knowledge, provide teaching improvement suggestions for teachers, and push personalized learning feedback and resources for students to enhance the effectiveness of evaluation.

4.3 Management and security level: Improve policies and regulations, strengthen ethical review and risk prevention, and promote Multi-stakeholder collaboration and cooperation

At the management and guarantee level of empowering ideological and political education in universities with generative artificial intelligence, it is necessary to establish a multidimensional collaborative mechanism: Firstly, it is essential to improve policies, regulations, and management

systems, as well as clarify technical application norms. Specifically, policies should define the scope of technology application, data protection standards, and ethical boundaries, ensure that generated teaching content aligns with socialist core values, and strictly prohibit the dissemination of harmful information. Meanwhile, a specialized management agency should be established to strengthen application supervision through regular inspections and evaluations, thereby safeguarding the privacy rights and interests of teachers and students. Secondly, the ethical review and risk prevention system should be enhanced. An ethical review committee comprising ideological and political experts, ethicists, and legal experts should be established to conduct rigorous reviews of technology-generated content, algorithm design, and data usage, with a focus on regulating value orientations. Concurrently, a risk warning mechanism should be developed to identify potential risks through data monitoring, formulate response plans, and promptly rectify content deviations. Thirdly, collaborative cooperation between schools, governments, and enterprises should be deepened to form a joint force for development. Universities communicate with the government to seek policy and funding support, and collaborate with enterprises to develop adaptive technologies through industry university research cooperation; The government guides enterprises to participate through macroeconomic regulation and special funds; Enterprises rely on their technological advantages to provide products and training services, helping teachers improve their technical application capabilities and jointly promoting the compliant implementation of technology in ideological and political education.

5. Conclusion

This study systematically reveals the reshaping effect of generative artificial intelligence on the ideological and political education ecology in universities through theoretical analysis and empirical exploration, and clarifies its advantages in educational content innovation, teaching method optimization, and precise service evaluation. Firstly, abstract ideological and political theories can be transformed into concrete content, such as constructing virtual historical scenes, generating knowledge graphs, and strengthening students' knowledge understanding and memory; Secondly, relying on AI digital assistants and virtual practical activities, we can meet students' personalized learning needs and cultivate their practical and innovative abilities; Thirdly, through learning data analysis, we can achieve precise services and evaluations, push personalized content and growth suggestions to students, and help them develop comprehensively.

At the same time, the study also points out the triple challenges faced by technological applications, including information security and privacy protection, the risk of data leakage throughout the entire lifecycle, and weak awareness of student privacy protection; At the level of value orientation, training data quality defects and ambiguous values in generated content may mislead students' judgments; At the level of human-computer interaction, excessive reliance on technology can weaken the subject status and emotional connection between teachers and students, and the transformation of teacher roles faces the dilemma of insufficient technological application ability and information literacy.

In response to the above issues, this study proposes countermeasures from a three-dimensional perspective. At the technical level, it promotes school research cooperation in developing adaptive technologies, explores new scenarios, synchronously improves data management systems, and strengthens security awareness education; At the level of education and teaching, a student-centered interactive inquiry based teaching model should be constructed, teacher technical training should be carried out to optimize teaching design and evaluation, and a diversified process evaluation system should be established; At the level of management guarantee, we will improve policies, regulations, and regulatory mechanisms, establish ethics review committees and risk warning systems, and deepen collaboration between schools, government, and enterprises. Through multi-dimensional strategic collaboration, challenges can be effectively resolved, technological value can be unleashed, and a systematic reshaping and optimization of the ideological and political education ecosystem in universities can be achieved.

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