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Risks and Mitigation Strategies for the Use of Multimodal Gen-AI in High School Ideological and Political Education

Bo Song*

Northwest Normal University, Lanzhou 730070, Gansu, China

Author to whom correspondence should be addressed.

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Abstract: Multimodal generative artificial intelligence (Gen-AI), leveraging diverse technological advantages—including text, images, audio-visual content, and interactive simulations—has provided novel support for innovating high school ideological and political education, effectively addressing longstanding pedagogical challenges in traditional classroom settings, such as limited instructional formats, inadequate contextualization, and abstract theoretical concepts. However, during this technological empowerment process, multiple factors—including algorithmic limitations, data bias, misuse by stakeholders, and insufficient institutional mechanisms—pose various risks to teaching practices, including deviations in value orientation, distortion of knowledge delivery, alienation of the roles of teachers and students, data security vulnerabilities, and inaccuracies in instructional evaluation. This paper aims to offer practical references for fostering high-quality development of high school ideological and political education in the era of digital intelligence.

Keywords: Multimodal Gen-AI; High school ideological and political education; Teaching empowerment; Teaching risks; Mitigation strategies

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1. Introduction

Against the backdrop of a new wave of educational digital transformation, the deep integration of artificial intelligence (AI) and basic education has emerged as a core trend in pedagogical reform. Multimodal Gen-AI technology overcomes the limitations of single-text-based instruction by employing multidimensional, visual, and interactive presentation formats, thereby aligning with the distinctive characteristics of high school ideological and political education—namely its political relevance, contemporary relevance, and practical applicability. High school ideological and political courses bear the fundamental mission of cultivating students' political identity, legal awareness, public participation skills, and scientific spirit; consequently,

they impose stringent requirements on the value orientation, rigor, and standardization of instructional content. While multimodal Gen-AI technology enriches teaching resources, innovates instructional scenarios, and enhances classroom efficiency, its inherent technical limitations and improper application practices may compromise the effectiveness of ideological and political education. In light of this, accurately assessing the various risks posed by technological empowerment and establishing a systematic, actionable risk mitigation framework constitute the key prerequisites for ensuring that multimodal Gen-AI technology is implemented in a compliant, efficient, and deeply integrated manner within high school ideological and political education.

2. Overview of Multimodal Gen-AI

Multimodal Gen-AI represents an advanced form of generative artificial intelligence. Unlike traditional single-modal AI systems—which primarily perform information retrieval and statistical data analysis—this technology integrates diverse information modalities, including text, images, audio, video, 3D scenes, and interactive animations. Leveraging large-scale pre-trained models, extensive data training, and intelligent generation capabilities, it enables autonomous creation of instructional content, scene reconstruction, dynamic interaction, and personalized adaptation. Compared to conventional AI-based teaching tools, multimodal Gen-AI possesses four core characteristics: diversified content generation, real-time instructional interaction, precise alignment with student learning profiles, and immersive scene construction. It can rapidly generate current affairs materials, simulate social scenarios, deconstruct theoretical challenges, and design inquiry-based tasks in accordance with high school ideological and political education curriculum standards and pedagogical requirements. Consequently, it effectively addresses the shortcomings of traditional ideological and political education—such as the dryness of theoretical content, outdated teaching materials, and insufficient practical application [1]. In high school ideological and political education settings, multimodal Gen-AI is applied across the entire instructional cycle: pre-class lesson planning, in-class instruction, post-class knowledge consolidation, student performance analysis, and evaluation feedback. It thus serves as a pivotal technological enabler for transforming such classrooms from traditional didactic approaches toward competency-oriented, scenario-based, and practice-driven pedagogical models. However, the generated content of this technology remains highly dependent on training datasets and algorithmic logic; it lacks autonomous value judgment capabilities. Moreover, due to its relatively low implementation threshold and rapid adoption pace, it can easily give rise to various pedagogical risks within the context of ideological and political education—a discipline that emphasizes ideological guidance and value cultivation. Therefore, standardized regulation and risk mitigation measures are urgently needed [2].

3. Potential risks associated with the use of multimodal Gen-AI in high school ideological and political education

3.1. Algorithmic bias poses a risk of distorting value orientations

Multimodal generative AI relies on vast amounts of online data for content generation, and its training datasets are mixed with diverse social ideologies and divergent value systems, including certain Western ideologies, one-sided social perspectives, and non-mainstream values. The algorithm lacks the ability to independently distinguish the mainstream value orientations specific to ideological and political education, making it highly susceptible to embedding biased interpretations in teaching outputs such as image-text

analysis, current affairs commentary, and scenario simulations. The core objective of high school ideological and political courses is to fulfill the fundamental mission of cultivating virtue and nurturing talent by fostering students' correct worldviews, outlooks on life, and values. However, some AI-generated teaching materials may offer one-sided interpretations of key topics such as national institutions, social development, and legal systems, weakening the guiding role of mainstream values. They might even present viewpoints that contradict curriculum standards, mislead students' political understanding, undermine the ideological educational function of these classes, and lead to distorted value judgments among students [3].

3.2. Risk of subject knowledge bias due to content generation distortion

The knowledge domain of ideological and political education in high school education demands exceptional rigor, standardization, and timeliness; its conceptual definitions, theoretical frameworks, current political policies, and legal provisions all adhere to strict official definitions and updated standards. In contrast, multimodal Gen-AI models suffer from technical limitations—such as model hallucinations, data latency, and logical inconsistencies—which can lead to knowledge omissions or inaccuracies, conceptual confusion, and biased policy interpretations when generating instructional content for ideological and political education. During the processes of decomposing key and challenging knowledge points, generating contemporary political case studies, and organizing theoretical frameworks, AI systems may arbitrarily juxtapose knowledge points, employ outdated interpretations of current policies, or distort core tenets of ideological and political theory. This can result in instructional content that appears plausible but is fundamentally erroneous. If teachers fail to conduct rigorous vetting before directly employing such content in classroom instruction, they risk imparting incorrect disciplinary knowledge, thereby disrupting students' knowledge construction and violating the principle of rigor in ideological and political education.

3.3. Excessive reliance on technology poses a risk of alienating the subjectivity of both teachers and students

The efficient material generation, courseware creation, exercise design, and student learning analytics capabilities of multimodal Gen-AI can easily foster technological dependency among teachers and students in high school ideological and political education, thereby leading to the alienation of the teaching subject. Some teachers increasingly rely on AI to handle the entire teaching process—from lesson planning and instruction to Q&A sessions—gradually eroding their core competencies in independent pedagogical research, instructional design, and classroom critical guidance. Consequently, they risk becoming mere adjuncts to technological tools, losing their dominant role in teaching. Meanwhile, students, who for extended periods depend on AI to complete ideological and political inquiry tasks, argumentative writing, and assignment creation—without engaging in independent thinking, dialectical analysis, or value reflection—may progressively lose their capacity for independent critical thinking, political insight, and written expression. This could place them in a position of passive knowledge reception, ultimately deviating from the fundamental educational objective of ideological and political education: cultivating students' core competencies [4].

3.4. Misuse of data collection poses risks to teaching privacy and security

Multimodal Gen-AI immersive and interactive teaching models require continuous collection of teaching and learning data from both teachers and students—including sensitive information such as teachers 'instructional design content, classroom teaching records, student classroom contributions, feedback on assignments,

student performance assessment data, and personalized learning trajectories. Such data largely pertains to students' ideological development and core information regarding campus teaching practices. Currently, however, most AI-based teaching platforms lack robust data governance mechanisms, exhibiting issues such as excessive data collection, inadequate data storage and encryption, lax access control, and risks of data leakage or misuse. Some platforms even unilaterally retain or share teaching and learning data without authorization, not only violating the personal privacy of teachers and students but also potentially leading to the improper utilization of students' ideological perspectives and classroom discourse content, thereby posing threats to campus information security and ideological safety.

3.5. Information cocoon solidification limits students' thinking expansion risks

The personalized recommendation algorithm of multimodal Gen-AI is fundamentally designed to align with users 'existing cognitive frameworks and learning habits. In the context of personalized ideological and political education in high schools, this algorithm continuously delivers homogeneous learning content tailored to students' preexisting viewpoints, thereby gradually constructing a closed information cocoon. The ideological and political curriculum requires students to adopt diverse perspectives to conduct dialectical analyses of social phenomena, current political issues, and societal challenges, thereby cultivating comprehensive critical thinking skills and inclusive social cognition. However, such information cocoons can rigidify students' cognitive boundaries, undermine their critical thinking and dialectical analytical capabilities, limit their exposure to diverse and reasonable viewpoints, hinder the development of a holistic, objective, and multidimensional social understanding, and ultimately impede the cultivation of critical thinking competencies within this discipline [5].

3.6. Fuzzy evaluation criteria lead to the risk of inaccurate teaching and education

Evaluation in high school ideological and political education possesses dual attributes: knowledge-based evaluation and value-based evaluation. It not only assesses students 'mastery of knowledge but also places greater emphasis on evaluating their political identity, value systems, critical thinking capabilities, and public participation competencies; consequently, such evaluations exhibit strong subjectivity and a comprehensive nature. In contrast, multimodal Gen-AI relies on standardized algorithmic models to conduct student performance assessments, homework grading, and competency evaluations; however, it can only achieve quantitative assessment at the knowledge level. It is unable to accurately discern students' value cognition, logical reasoning, emotional attitudes, and ideological insights, making it ill-suited to meet the evaluation requirements oriented toward disciplinary competencies in ideological and political education. This approach risks leading to one-sided evaluations, distorted results, and biased orientations, thereby preventing teaching evaluations from providing precise feedback on the effectiveness of student cultivation and potentially misleading the direction of subsequent instructional optimization.

4. Pathways to mitigating potential risks in high school ideological and political education empowered by multimodal Gen-AI

4.1. Calibrate the algorithmic logic to fortify the defense line for mainstream value guidance

To mitigate the risk of value deviation caused by algorithmic bias, it is essential to establish an algorithm

calibration mechanism tailored to the requirements of ideological and political education in secondary schools, thereby regulating the value orientation of AI-generated content at its source. Technology R&D enterprises should collaborate with experts in ideological and political education and subject teaching researchers to optimize multimodal Gen-AI training datasets; this includes comprehensively filtering out redundant data containing erroneous ideological trends, one-sided viewpoints, or content that deviates from mainstream values, and integrating core elements—such as ideological and political education curriculum standards, mainstream ideology, and socialist core values—into these datasets to construct specialized teaching datasets for ideological and political education. Simultaneously, enterprises should incorporate dedicated value screening algorithm modules to conduct preliminary value assessments on AI-generated instructional materials—including images, text, videos, and scenario-based cases—thereby preventing the introduction of inappropriate value content into classrooms and ensuring that technological empowerment consistently aligns with the core objective of ideological and political education: fostering virtue and nurturing individuals [6].

4.2. Refine review mechanisms to control the quality of disciplinary knowledge output strictly

To mitigate teaching risks associated with AI-generated content distortion and knowledge bias, it is essential to establish a three-tier content review mechanism—comprising "AI initial generation + teacher secondary review + teaching-research final review" —thereby upholding the fundamental requirement for rigor in knowledge delivery within ideological and political education [7]. Frontline ideological and political educators should adopt a cautious approach to technology utilization, conducting item-by-item verification of AI-generated courseware materials, knowledge interpretations, current affairs cases, and exercise answer keys; they should then cross-reference these outputs with official textbooks, current political policies, and authoritative analyses to rectify any inaccuracies or omissions. School-level teaching-research groups should regularly conduct specialized teaching-research sessions on AI-based instructional content, identify prevalent knowledge bias issues, develop standardized review checklists and error-correction protocols, and promptly update AI model training data to align with the current affairs-oriented and dynamic characteristics of the ideological and political discipline, ensuring that all AI-generated instructional content complies with disciplinary standards and pedagogical requirements [8].

4.3. Redefining the roles of teachers and students to establish a human-machine collaborative teaching paradigm

To mitigate the risk of alienation of teachers and students as primary agents, it is essential to clarify the instrumental nature of multimodal Gen-AI, thereby reshaping the framework of ideological and political education—one characterized by teacher leadership, student agency, and technological support [9]. Teachers should proactively transform their pedagogical philosophies by employing AI as a tool for lesson preparation, scenario construction, and student learning analysis; they should independently oversee core instructional components—including lesson design, classroom critical discourse, value guidance, and competency cultivation—while continuously enhancing their own teaching research capabilities and classroom leadership skills. During instruction, teachers should guide students in the appropriate use of technological tools, delineate clear boundaries for AI application, and prevent students from directly copying AI-generated answers or relying on AI to complete critical inquiry tasks. Instead, students should be encouraged to leverage

AI to broaden their learning horizons, organize their knowledge frameworks, and diversify their investigative perspectives. Through autonomous thinking, classroom discussions, and in-depth critical analysis, students can foster the development of essential competencies, ultimately establishing a new pedagogical paradigm characterized by human-machine collaboration and a well-defined hierarchy of roles [10].

4.4. Refine the governance framework and strengthen the protection of teaching data privacy

To address the risks of data security and privacy breaches, it is essential to establish a multi-stakeholder collaborative data security governance framework and standardize the end-to-end management of AI-powered teaching data. Educational regulatory authorities should issue guidelines for the use of AI-based ideological and political education data, specifying the principle of minimal necessary data collection, and strictly prohibiting excessive data collection or non-compliant retention of sensitive information pertaining to teachers and students in ideological and political education contexts. Technical platforms should upgrade security technologies—including data encryption, access control mechanisms, and blockchain-based evidence preservation—to ensure end-to-end encryption protection across the entire lifecycle of teaching data (from collection, storage, and use to transmission), and establish a data access traceability mechanism. Schools should regulate access permissions for teachers and students to AI-powered teaching tools, conduct specialized training sessions on data security and privacy protection, and prevent unauthorized uploads or leakage of sensitive teaching data, thereby comprehensively fortifying the data security safeguards for ideological and political education [11].

4.5. Breaking down cognitive barriers to cultivate students' dialectical critical thinking skills

To address the issue of cognitive rigidity caused by information cocoons, it is essential to optimize the logic of AI-powered personalized content recommendations, integrate these efforts with the requirements for dialectical teaching in ideological and political education, and establish a diversified and open content delivery system [12]. Technically, this involves adjusting algorithmic recommendation mechanisms to reduce the delivery of homogeneous content, while increasing the inclusion of diverse current affairs perspectives, dialectical social case studies, and multi-angle theoretical analyses, thereby guiding students to develop a comprehensive understanding of social phenomena and ideological and political theories. Instructionally, teachers can leverage AI-driven multimodal teaching materials to design comparative, inquiry-based, and dialectical classroom tasks, encouraging students to actively break through their preconceived notions, analyze issues from multiple perspectives, and evaluate viewpoints dialectically. This approach fosters critical thinking, systematic thinking, and the ability to make independent value judgments—thereby aligning with the cultivation of core competencies in the ideological and political education discipline [13].

4.6. Optimize the evaluation system to achieve competency-based, targeted talent development

To address the issue of inaccurate AI-based teaching evaluation, it is essential to establish an integrated evaluation framework combining "machine-based quantitative evaluation" and "teacher-based qualitative evaluation," tailored to the educational objectives of ideological and political literacy in senior high schools. By leveraging multimodal Gen-AI, quantitative indicators—such as students 'knowledge acquisition,

adherence to answer guidelines, and learning progress—can be assessed, thereby enhancing evaluation efficiency. Simultaneously, the pivotal role of teachers' manual evaluations should be reinforced, with a focus on qualitative dimensions including students 'critical thinking performance in class, value cognition, emotional attitudes, and awareness of public participation. Integrating these assessments with the students' entire learning journey enables comprehensive and developmental evaluations. This approach compensates for the limitations of AI algorithmic evaluations, achieving an organic synthesis of knowledge assessment and value assessment, as well as quantitative and qualitative evaluation. Consequently, it provides precise feedback on the effectiveness of educational practices, offering a scientific foundation for optimizing ideological and political teaching [14].

5. Conclusion

The deep integration of multimodal Gen-AI with high school ideological and political education represents an inevitable trend in pedagogical reform within the context of educational digital transformation. While this integration offers significant advantages—such as innovating teaching models, enriching instructional resources, enhancing teaching efficiency, and fostering subject-specific literacy—various pedagogical risks arising from the inherent limitations of technological tools and improper application practices can directly compromise the scientific rigor, standardization, and practical effectiveness of ideological and political education [15]. Only by fully acknowledging the dual nature of technological empowerment—precisely identifying core risks including value deviation, knowledge distortion, subject alienation, data security concerns, cognitive rigidity, and flawed evaluation mechanisms—and by adopting multidimensional strategies—including algorithm calibration, content moderation, role redefinition, data governance, cognitive cultivation, and evaluation optimization—we can establish appropriate boundaries for technological application, refine risk prevention and control frameworks, and thereby achieve a healthy integration of multimodal Gen-AI with high school ideological and political education. This approach will truly leverage digital and intelligent technologies to fulfill the fundamental mission of ideological and political education: fostering virtue through education, and thereby drive high-quality, sustainable development of high school ideological and political teaching.

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