Challenges and Strategy Construction for "Three-all Education" in the Context of AIGC Development

Xinming Song*

School of Marxism, Taiyuan University of Technology, Jinzhong 030600, China

*Corresponding author: Xinming Song, E-mail: 2024004655@link.tyut.edu.cn.

Abstract

Artificial intelligence under the development of technological revolution has moved from decision-making artificial intelligence to generative artificial intelligence, but the technological drawbacks brought about by this are bound to pose new challenges to ideological and political education and even the "Three-all Education" in the new era. Based on the current situation, this paper uses literature review and case analysis methods to explore how the three gaps in AIGC (namely the technological access, usage skills, and content creation) exacerbate educational inequality and impact on the goals of "Three-all Education", namely all-staff collaboration, whole-process coverage and all-round penetration. It also provides theoretical support for establishing a technology-education-ethics embedded collaborative framework in the future.

Keywords

1. Introduction

With the continuous development of science and technology, artificial intelligence (AI) has evolved from mechanical AI to cognitive AI and then to perceptual AI. Currently, artificial intelligence has developed to the stage of generative artificial intelligence. In this stage, data becomes a production resource and artificial intelligence becomes the driving force. The Artificial Intelligence Generated Content (AIGC) is novel and original, capable of autonomously learning and mastering data characteristics, possessing a certain degree of creativity and imagination, and generating content that is coherent and reasonable, aligning with human cognition. Therefore, generative artificial intelligence is currently being applied on a large scale in the field of education. Entering a new era, the Party and the State have proposed the strategic goal of "Three-all Education"—all-staff education, whole-process education, and all-round education—to better meet the practical needs of realizing the great rejuvenation of the Chinese nation.

With the development and integration of generative artificial intelligence into education and teaching, it has promoted the implementation of "Three-all Education" to a certain extent, but it also makes the implementation of "Three-all Education" face certain risks and unstable factors (Wang & Zhou, 2025). This paper begins with the specific grand strategy of AIGC in the field of education: "Three-all Education". It explains how AIGC widens the education gap through the dimensions of technology access, application skills and content production, and criticizes the three major elements of "Three-all Education": "all-staff collaboration, whole-process coverage and all-round penetration", thereby providing a strategic basis for future ideas and strategies for the integration of technology, education, and ethics. We hope to further explain and

explore the "Three-all Education" from a technical perspective, aiming to supplement and improve scholars' thoughts on the technology and philosophy of "Three-all Education", while assisting policymakers in alleviating the negative impact of AIGC on education to promote the realization of educational equity and high-quality education.

2. Theoretical Connotation and Practical Framework of "Three-all Education"

"Three-all Education" refers to all-staff education, whole-process education, and all-round education, which is the overall layout and strategic deployment of moral education in universities in the new era. In 2017, the Ministry of Education issued the Notice on the Comprehensive Reform Pilot Work of "Three-all Education", proposing the construction of the "Ten Education Systems", strengthening resource integration, improving organizational structures, enhancing the overall planning of educational work, and promoting systematic and comprehensive coverage of educational work.

The basic essence of "Three-all Education" lies in all-staff education, whole-process education, and all-round education. All-staff education mainly refers to all educators taking on educational responsibilities, forming an all-round, multi-level educational situation, where not only teachers but all teachers, management, and service positions are the main subjects of education, ensuring full participation. Whole-process education refers to connecting all educational processes, forming a consistent educational chain from the first day students enter school through their learning, life, and practical activities at school. All-round education refers to fully utilizing various educational resources and carriers, creating a multi-dimensional and comprehensive educational environment that combines in-class and out-of-class, on-campus and off-campus, online and offline.

At present, the "Three-all Education" has established a relatively complete multi-level implementation path. From the top level, most universities have established a "Three-all Education" leadership group led by the Party Secretary and the President, concentrating various resources within the campus under the guidance of "unified leadership by the Party Committee, joint management by the Party and administration, and coordinated interaction among departments", relying on the "Ten Education Systems" to fully leverage the roles of departments such as the Academic Affairs Office and the Research Office, breaking the relatively independent state of each. The "Three-all Education" strategy forms a comprehensive education network through four complementary methods: internal collaboration within schools, home-school-community interaction, assessment and evaluation, and resource assurance.

3. Impact of AIGC Technology Development on the "Three-all Education"

3.1 The Digital Divide Creates a Collaborative Dilemma at the Level of All-staff Education

Essentially, since teachers themselves are the main force in 'human-machine collaborative' education, their differences in digital literacy directly affect the educational outcomes. On the other hand, due to varying levels of digital literacy among teachers, there is a noticeable difference in AIGC application capabilities between them. Due to factors such as technological application gaps, innovation capabilities being constrained by bottlenecks, and slow conversion of research achievements, some teachers find it difficult to effectively use AIGC in teaching, unable to fully play the role of all-staff education. Additionally, the rapid development of AIGC imposes higher demands on teachers, increasing the burden of teacher training. Moreover, due to limitations such as funding and professional knowledge, institutions often cannot afford more training and other teacher services, and some methods are often "one-size-fits-all", widening the gap between teachers and students. Cooperation and dialogue are needed to better allow teachers to provide feedback. AIGC applications require interdisciplinary collaboration, but the knowledge barriers among teachers from different disciplines are high, and the gap in technical skills is significant, making interdisciplinary collaboration difficult.

Since students are the subjects and objects of education, in the AIGC era, low data literacy can affect the application and utilization of relevant resources. At the same time, there is a certain degree of variability in different students' AIGC usage capabilities. The survey shows that 8.7% of vocational college students and 13.8% of undergraduate students do not gain enlightenment from using AIGC, which can lead to their superficial acceptance of content and loss of the ability to question, hindering in-depth learning (Zhao et al.,

2025). Therefore, these abilities make it difficult for students to fully grasp the AIGC resources, which has a negative impact on their learning. However, different groups have different motivations for using AIGC software tools, and the stronger the external motivation during the learning process, the more likely they are to use AIGC to assist in writing. These motivations may lead to students misusing or overusing AIGC.

In addition to teachers and students, university administrators and parents are also key participants in all-staff education, and their digital literacy gap can affect the work of all-staff education. The difference in digital literacy among university administrators affects the application of AIGC in student management and teaching evaluation. Without understanding digital technology, it is difficult to realize its value. If managers themselves do not understand digital technology, it will be difficult to fully utilize AIGC in their work. Not to mention improving management efficiency and decision-making levels on this basis. When AI becomes an intelligent assistant in family education, acting as a "personalized tutor", it can provide users with the latest growth and learning data of their children based on family education needs, promptly analyze and summarize strengths and weaknesses, and offer personalized guidance strategies suitable for this type. However, some parents in the family may not have sufficient ability to use relevant platforms, which can also affect the effectiveness of home-school collaborative education.

3.2   Disconnection between Stages Leads to Challenges in the Whole-process Education

First, the technology of AIGC will lead to phenomena of technological exclusion and inequality of opportunity during the admission phase. Simplifying AI assessments can easily lead to algorithmic bias or invisible discrimination against students from rural or underdeveloped areas, resulting in inaccurate evaluations. As AIGC is used for college admissions, information will become increasingly rich and diverse. However, due to the varying family backgrounds of students, those from families with poor digital environments find it difficult to access admission information and understand the complex application methods in the admission system, ultimately resulting in their opportunities for enrollment being deprived. Moreover, the use of AIGC may increase costs, and the fees could widen the gap between the rich and the poor. For many families in various regions, they spend a lot of money to purchase various AIGC tools and services to ensure their children have superior learning conditions. For families unable to afford high fees, this means their children will lose the opportunity to compete. It is precisely because of this that the digital divide among families leads to an educational gap.

Second, during the training process, there may be difficulties in adapting to changes in teaching methods, with one issue being the lag in updating teaching content. Due to the rapid development of AIGC, its content updates may lag behind actual teaching needs. For example, while Alibaba's "Double Eleven" has surpassed eBay, university classrooms still use e-commerce models from the eBay era for cross-border trade. Building smart classrooms based on the Internet of Things can achieve real-time monitoring of the teaching environment, while those based on VR virtual laboratories can break through the time and space limitations of ideological and political practice and increase the number of visitors to large-scale red education bases to three times the original number. However, only some universities can use these high-end and high-tech equipment (Fang, 2024).

3.3   Challenge in the All-round Education Dimension Lies in the Barriers to Field Integration

In addition, excessive reliance on AIGC will also lead to a lack of humanistic care in classroom teaching. Sui Lingling pointed out that the contradiction between instrumental rationality and humanistic care has caused education to fall into technology dependence, resulting in the loss of human feelings and the cooling of emotions (Sui & Xu, 2023). Furthermore, in the process of AI-assisted teaching, it is easy for teachers to overuse technology but ignore the cultivation of humanistic feelings with students, thus losing the functional essence and value realization of education.

Second, the existence of information cocoons in the network domain leads to difficulties in guiding values, as AIGC algorithm recommendations can easily confine students within information cocoons, hindering their perspective and thinking. The homogenization of circle information may also lead to the weakening and inefficiency of the discourse of ideological and political educators, which is not conducive to fostering students' diverse and open-minded thinking and awareness, thereby affecting the positive and healthy development of

their values. With technological advancements, AIGC can generate more realistic false information content, increasing the difficulty of network information governance. Some malicious individuals may use AIGC to create false information and negative content, spreading misleading statements on social media and online platforms, affecting students' values and behavior patterns.

4. Path to Building a Technology-education-ethics Collaborative Mechanism

4.1 Narrow the Access Gap Through the Universalization of Infrastructure

First, promote the sharing of computing resources and infrastructure development, which can establish regional high-performance computing centers and use cloud computing technology to provide computing support to universities within the region. Based on cloud technology, utilize modern information technology to accelerate the reform of talent cultivation models, achieving an organic integration of large-scale education and personalized training. The important task goal proposed in China Education Modernization 2035 can provide more feasible methods for higher education during the digital transformation process. Some AIGC functions (such as face swapping and lip-syncing) require high-end equipment, and differences in infrastructure directly affect the results. Promoting lightweight models can help narrow the gap.

Second, establish a mechanism for co-building and sharing digital resources. Referencing the "National Primary and Secondary School Smart Education Platform" model, we can build a national-level AIGC educational resource pool and deliver computing power to rural areas through a 5G private network. This resource pool can integrate high-quality teaching resources, achieve co-construction and sharing of resources, and reduce regional disparities in resources. We can establish a collaborative platform for sharing AIGC resources among universities to promote the co-construction and sharing of high-quality resources. Research shows that Beijing Normal University has built a "Digital Education Courtyard" and carried out a series of teaching and research activities around it, which has helped Ziyun County's teachers improve their digital literacy and teaching level in the long term. This practice is conducive to promoting resource sharing among universities in the region (Beijing Normal University, 2025).

Finally, develop a mechanism for co-constructing AIGC educational resources between schools and enterprises to match industry resources with educational and teaching needs. The AI Empowerment for Teacher Workforce Development Action Pilot issued by the Ministry of Education clearly promotes the integration of AI technology in teaching. Additionally, DeepSeek, a domestically developed model with independent intellectual property rights, is used by over 300 universities in China for teaching purposes. This new educational model resource platform, established through school-enterprise collaboration, can better utilize high-quality educational resources.

4.2 Promote the Systematization of Digital Literacy to Enhance AIGC Usage Capabilities

First, enhance teachers' digital literacy by creating a tiered and categorized AIGC training system tailored to educators from different disciplines and with varying professional titles. University teachers' digital literacy is the foundation for the digital transformation of higher education and is key to meeting students' diverse needs and nurturing high-quality digital talent. Additionally, establish an AIGC learning community for teachers to facilitate experience sharing and collaborative innovation among educators. The survey shows that the teaching method of combining online and offline teaching and using 5G to achieve real-time interaction between teachers and students can increase classroom participation rate by about 55% (Wang & Liu, 2024); colleges and universities should build a school teacher learning community, guide teachers to share AIGC-related experiences and resources, explore the best application solutions for AIGC, and establish a teacher learning community through online platforms to provide teachers with space for online communication and learning at any time, and set up dedicated professional and technical personnel to solve practical problems for teachers.

Second, cultivate students' digital skills. Incorporate AIGC application capabilities into university talent cultivation programs, establish a training system, and develop differentiated AIGC capability training plans tailored to students from different majors and with varying levels of foundational knowledge. Build an AIGC practice innovation platform, carry out project-driven learning, encourage students to serve the campus, community, and rural areas based on their professional knowledge, and improve their AIGC application

capabilities and innovative thinking level in creative practice. For example, students from the School of Information Engineering of Jiangxi University of Science and Technology went to the countryside and combined their professional knowledge to open up a magical new world of science and technology for rural children (School of Information Engineering, 2025).

Third, empower management service personnel for digital transformation. Training to enhance the AIGC application capabilities of university administrators helps bridge the digital divide and improve the digital level of management services. University teachers' digital literacy encompasses aspects such as digital learning mindset, information utilization skills, open collaboration abilities, business innovation capabilities, and cybersecurity awareness. This also applies to administrative staff, as improving their digital literacy can better ensure the efficiency and standardization of management services.

4.3   Use the Equalization of Educational Resources to Promote Content Creation

First, establish a platform for the co-construction and sharing of AIGC teaching resources, and encourage teachers to upload and share their excellent courses and works. It is able to establish regional teaching and research communities based on teachers' different strengths and the uneven development of regions, promoting the collaborative development of AIGC teaching resources within the region. Research shows that Beijing Normal University uses the construction of "Digital Education Courtyard" as a base point to organize a series of activities for local teachers, effectively enhancing their digital literacy and teaching abilities, and improving teachers' AIGC application and resource development capabilities through regional teaching and research communities. At the same time, because AIGC makes the boundaries between disciplines increasingly blurred, it is necessary to break the formalized bureaucratic logic centered on a single discipline, reshape the process of interdisciplinary integration and resource allocation, form a large-scale logical structure, and give play to the role of knowledge integration and innovation, so as to promote the mutual integration of disciplines (Beijing Normal University, 2025).

For individual students, they can determine their suitable learning path planning and corresponding learning resource recommendations based on their digital literacy. Zhejiang Normal University uses AI to mine and analyze students' academic behaviors and cognitive patterns, and tracks their learning behaviors, cognitive states, and emotional changes in real time to monitor their knowledge acquisition (Zhejiang Normal University, 2025).

4.4   Institutionalize Ethical Governance to Ensure Sustainable Development

To address AIGC challenges, a new evaluation mechanism should be established with the goal of eliminating bias and discrimination, while considering the fairness of AIGC algorithms. This mechanism should be applied to the generation of AIGC ideological and political education cases to avoid potential bias related to region, class, etc., in automatically generated results. In specific tasks, it is necessary to establish a system for tracing and marking AIGC-generated content, clarifying the source and generation process of AIGC content. Students are required to indicate which AI technologies they used and the proportion of AI-generated content in their assignments or papers completed using AIGC tools, ensuring academic integrity.

In response to current issues concerning the information society, university education data, and personnel information security, it is necessary to promptly introduce privacy protection standards for university education data. Universities should equip themselves with professional resources to ensure campus network security, effectively strengthen the management of internal digital and intelligent technology applications, and strictly control the risks and hazards that may arise during the digital transformation of schools. Develop an AIGC application regulatory platform to achieve comprehensive regulation and risk warning for technology applications, which helps enhance the supervision of digital and intelligent technology applications within schools and prevents issues like privacy leaks during the digital transformation of schools.

Additionally, strengthen diverse collaborative governance methods to build a collaborative governance system for AIGC involving the government, universities, enterprises, and the public, creating a synergistic effect. In fact, in response to the different governance models of AI education in various countries (for example, independent model, integrated model and thematic model), my country currently adopts an independent model - issuing the New Generation Artificial Intelligence Development Plan to form a centralized policy under unified leadership (State Council of the People's Republic of China, 2017).

Finally, establish an AI ethics review committee in universities to conduct ethical evaluations and supervision of AIGC application projects. For example, establishing an AI ethics review committee composed of technical experts, education experts, ethics experts, and legal experts to conduct ethical evaluations of AIGC application projects, ensuring that the application of technology meets ethical and legal requirements. In addition, a psychological corpus exclusive to colleges and universities can be built, and the records of counselors' heart-to-heart talks can also be included in the corpus, and the dual mechanism of "algorithm review-manual review" can be used to avoid ethical risks (Shi & Xu, 2025).

5. Conclusion

"Three-all Education" is a key approach to achieving comprehensive personal development in the construction of a strong education nation in the new era. It is also a major innovation in China's education sector. By continuously advancing "Three-all Education", opportunities are created, making it possible to further promote this initiative using the increasingly refined AIGC. However, the existential crisis accompanying AI development cannot be ignored. AIGC can easily lead to difficulties in collaborative all-staff education, gaps in the stages of whole-process education, and extreme dependence on domain integration and value reconstruction.

To address this, we should break the current isolated development path of technology in the face of AI dilemmas and explore methods to build a technology-education-ethics collaborative mechanism, which might be one of the solutions. Specifically, the construction of an ethics collaborative mechanism for technology and education can be achieved through the following four aspects: universal access to infrastructure. Systematization of digital literacy; equitable distribution of educational resources; institutionalization of ethical governance. By establishing a comprehensive, multi-level, and broad-based institutional framework for the application of artificial intelligence, particularly generative AI, the norms and standards for its use can be improved, thereby advancing the implementation of "Three-all Education". Additionally, this paper has several limitations. First, it relies on literature analysis and case studies, lacking support from large-scale empirical survey data. Second, this paper mainly focuses on the current state of higher education in our country, with relatively few international comparative studies. Third, there is a certain degree of uncertainty in predicting the future development trends of AIGC. Therefore, further in-depth discussions can be conducted based on this in the future.

References

Beijing Normal University. (2025). *Report on the construction of digital education institutes and the enhancement of teachers' digital literacy*. Beijing Normal University Press.

Fang, Y. (2024, December 20). Exploration and practice of digital-intelligent collaborative education under the "three comprehensive education" framework. *Guangdong Science and Technology News,* 014.

School of Information Engineering. (2025). *Annual report of the "e-road Qianxing" technology volunteer service project*. Jiangxi University of Science and Technology.

Shi, L., & Xu, Z. (2025). Application of generative artificial intelligence in mental health education for college students. *Journal of Wuhan University of Technology (Social Sciences Edition), 38*(3), 140-146.

[Record #98 is using a reference type undefined in this output style.]

Sui, L., & Xu, M. (2023). Intelligent ideological and political education: internal logic, contradictory dilemmas, and implementation strategies. *Journal of Beijing Union University (Humanities and Social Sciences), 21*(4), 26-34.

Wang, H., & Liu, H. (2024). Seamless intelligent ideological and political education: a new paradigm for ideological education in higher education. *Education Review,* (5), 85-93.

Wang, Y., & Zhou, T. (2025). Artificial intelligence reshapes the future of teaching and learning: interpretation and insights from the 2025 EDUCAUSE horizon report (teaching and learning edition). *China Education Informationization, 31*(6), 89-100.

Zhao, X., Xu, D., & Hu, Z. (2025). Artificial intelligence reconstructs the higher education ecosystem: trends, transformations, and governance—key points and reflections on the 2025 horizon report (teaching edition). *Open Education Research, 31*(3), 42-51.

Zhejiang Normal University. (2025). *Case studies on artificial intelligence empowering educational and teaching reform*. Zhejiang Education Press.

Funding

Conflicts of Interest

Acknowledgment

Copyrights