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Issues and optimization pathways in the evolution of China's higher education AI policies

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Abstract: Artificial intelligence technology is profoundly transforming the systems of talent cultivation, discipline development, and scientific research innovation in higher education. This study analyzes national policy documents issued between 2000 and 2025 and, grounded in policy instrument theory, explores their evolutionary trajectory. It finds that policies have undergone four stages: technology introduction, discipline development, system construction, and deep integration. The focus has shifted from technology application to ecosystem building; however, issues such as homogenization of disciplinary layout, ineffective industry-education collaboration, lagging faculty development, and the absence of ethical guidelines persist. The study proposes optimization pathways across four dimensions—categorical guidance, deepened collaboration, capacity building, and governance improvement—to provide theoretical and practical support for the deep integration of the two domains.

Keywords: artificial intelligence; higher education policy; policy instruments; talent development; industry-education integration

1 Introduction

As the core driving force of the new round of technological revolution and industrial transformation, artificial intelligence is reshaping the global landscape of higher education. Since the 21st century, China has incorporated AI-enabled educational development into its national strategy. As the primary arena for talent cultivation and technological innovation, the design of relevant higher education policies directly impacts the nation's technological competitiveness and the progress of educational modernization.

Internationally, countries such as the United States, the United Kingdom, and Japan have all designated AI education as a strategic priority, each with distinct emphases. Tan Jianchuan examined the strategies adopted by various nations in response to generative AI: the United Kingdom emphasizes risk management, the United States focuses on balancing innovation and legislation, and Japan promotes its application in schools [1]. Relevant research indicates that the allocation of AI policy tools is balanced, with a core focus on quality assurance, resource development, and talent cultivation. Domestic research indicates that the advancement of relevant policies in China has accelerated, but these policies primarily focus on the macro-level education sector. There is a lack of specialized and systematic research targeting higher education, leaving gaps in areas such as the logic of policy evolution and the allocation of policy tools.

1.1 Core concepts and research methods

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This study defines higher education AI policies as a policy framework formulated by the state and government departments, implemented primarily by higher education institutions, and aimed at promoting the deep integration of AI and higher education. It encompasses three dimensions: talent development, technology application, and governance safeguards. This study focuses on policy content closely associated with higher education. For comprehensive policy documents such as the *New Generation Artificial Intelligence Development Plan*, only the provisions pertaining to higher education are analyzed to ensure research specificity.

This study employs text analysis, examining national-level policies issued between January 2000 and March 2025. The selection criteria for policies are as follows: First, the issuing authority must be the State Council, the Central Government, or its constituent departments (such as the Ministry of Education, the Ministry of Science and Technology, or the Ministry of Industry and Information Technology); second, the content must explicitly address AI applications, talent development, and discipline construction in higher education; and third, the documents shall be formally formulated and readily accessible.

2 The evolution of AI policies in higher education

Based on changes in policy objectives and the release of landmark documents, this study divides the evolution of relevant policies since 2000 into four distinct phases, each with its own distinct characteristics.

2.1 Technology introduction phase (2000–2015): dominated by infrastructure development

During this phase, artificial intelligence served merely as a tool for the informatization of higher education and had not yet evolved into an independent policy issue; the core focus was on infrastructure development. Although relevant planning outlines issued in 2006 and 2010 mentioned intelligent technologies and educational informatization, artificial intelligence was not separated from the information technology system.

Policy instruments were primarily supply-oriented, emphasizing resource and hardware development, while innovation in talent cultivation lagged behind; there was a scarcity of environment-oriented and demand-driven instruments. Governance was advanced mainly by education administrative departments, with scattered explorations by universities; industry-academia-research collaboration remained in its initial stage, and technological penetration was relatively limited, reflecting a "technology-as-a-tool" orientation. Teng Fei and Sun Ying argue that while AI technology began to penetrate during this phase, its scope was limited; policy focus remained on "educational informatization" rather than "intelligent education", and AI was largely viewed as an auxiliary tool [2].

2.2 Discipline development phase (2016–2018): establishment of strategic status

The "Internet Plus" strategy and the advancement of the intelligent manufacturing industry drove a notable policy shift, with the focus shifting from generalized informatization to discipline development and talent cultivation. In 2017, the *Development Plan for the Next Generation of Artificial Intelligence* elevated AI to a national strategy, serving as a guiding document, after which the number of policies surged.

The 2016 *Internet Plus Artificial Intelligence Three-Year Action Implementation Plan* promoted the systematization of talent cultivation, while two action plans issued by the Ministry of Education in 2018 formed a dual-engine drive mechanism, clarifying development goals and marking the entry into the systematic development phase.

2.3 System construction phase (2019–2021): multi-dimensional collaborative advancement

Policies during this phase exhibited systematic characteristics, with the focus shifting from "quantitative expansion" to "qualitative improvement". In 2019, *China Education Modernization 2035* incorporated smart education into the core agenda of educational modernization. That same year, numerous universities received approval to establish new AI programs, marking the entry of talent development into a phase of standardization and large-scale expansion.

In 2020, the Ministry of Education and other departments launched the "Strengthening Foundations Program", incorporating artificial intelligence into the cultivation of top-tier talent and promoting the practical application of technology; in 2021, relevant policies proposed the establishment of a high-quality education system, initiated pilot programs for teacher development, and fostered a multi-dimensional collaborative framework.

2.4 Deep integration phase (2022–2025): improvement of the governance system

Since 2022, generative AI has propelled policies into a phase of digital transformation and governance refinement. In 2022, relevant guidelines called for "reconstructing the talent development system with a digital mindset" to promote the full-process application of AI.

In 2023, the *Interim Measures for the Management of Generative Artificial Intelligence Services* incorporated ethical standards into the policy framework for the first time; in 2024, efforts to enhance the quality and efficiency of discipline development in higher education were intensified, with policies related to basic education exerting a synergistic influence on higher education; in early 2025, the *Outline of the Plan for Building an Education Powerhous*e identified the deep integration of AI and education as a key pillar for building an education powerhouse, thereby refining the top-level design.

3 Major issues in higher education AI policies

After evolving through four phases, policy implementation has yielded significant results, but a series of structural contradictions have been exposed, which are interrelated and form systemic challenges.

3.1 Convergence in disciplinary structures and lack of differentiation

The expansion of related majors has led to homogenization in disciplinary structures, with different types of universities adopting similar educational objectives and curriculum systems, failing to establish a differentiated development landscape. Dwivedi et al. argue that technological development requires deep engagement from the humanities and social sciences to address challenges such as algorithmic bias and data privacy [3]. Disciplines have focused excessively on the technical dimension, with insufficient interdisciplinary integration with the humanities and social sciences, thereby affecting the comprehensiveness of talent cultivation and the responsible development of technology.

The root causes stem from misguided policy orientation and distorted evaluation mechanisms: policies lack differentiated guidance, leading universities to pursue trends indiscriminately; evaluation systems centered on disciplinary rankings and academic publications intensify homogenized competition, stifle distinctive development, and trigger inefficient resource allocation and imbalances in talent supply.

3.2 Ineffective mechanisms for industry-education integration

Progress in industry-education integration has been severely hampered, with most collaborations remaining superficial and shallow. Current policies lack operational institutional arrangements and incentive mechanisms for collaborative education, making it difficult to reconcile the divergent demands of universities and enterprises; industry-education integration bases are not supported by long-term guarantee mechanisms, and enterprises hesitate to participate owing to cost issues and technology confidentiality concerns.

Furthermore, unclear delineation of responsibilities among diverse stakeholders and inefficient resource integration, coupled with a lack of long-term policy safeguards and insufficient intrinsic motivation for corporate participation, constrain deep engagement in industry-education integration, resulting in a disconnect between talent cultivation and industrial needs.

3.3 Lagging faculty development

The lag in faculty development has become a bottleneck in policy implementation. The rapid expansion of artificial

intelligence programs has led to a shortage of high-caliber faculty and a scarcity of multidisciplinary instructors, while mechanisms to strengthen teachers' digital literacy and AI teaching competencies remain absent.

Existing training programs lack systematic and customized approaches, resulting in poor outcomes. Sun Pin and Jiang Yu point out that although teachers' AI teaching capabilities have been incorporated into the policy framework, the development of training mechanisms lags behind [4]. Furthermore, faculty evaluation focuses on research achievements, making it difficult for efforts in AI teaching innovation to gain recognition, which dampens teachers' motivation to participate in educational reform.

3.4 Absence of an ethical governance framework

Generative AI raises ethical risks such as academic integrity and data privacy, yet existing policies contain gaps in ethical governance. The evaluation of AI-based education is controversial, accompanied by weak teacher-student trust. Generative AI challenges traditional academic integrity systems, calling for urgent policy guidance to standardize relevant practices. Yu's reflection on whether ChatGPT should be banned in academia indicates that higher education must seek a new balance between technological application and academic norms [5].

At the same time, data governance systems are underdeveloped, with inadequate cybersecurity and privacy protection. Furthermore, there is no legal definition of "AI education", relevant risk constraint mechanisms are missing, and ethical dilemmas also impede its sustainable integration.

4 Pathways and recommendations for policy optimization

In response to the above issues, and in light of policy principles and practical needs, this study proposes optimization recommendations across four dimensions—categorical guidance, institutional improvement, capacity building, and governance framework development—to drive coordinated policy upgrades.

4.1 Establishing a categorized guidance mechanism to address the dilemma of homogeneous disciplinary structures

A classification-based guidance mechanism should be established to advance differentiated development across higher education institutions. Research universities shall prioritize basic research and high-end talent cultivation; applied undergraduate colleges focus on industry-oriented demands; and vocational colleges emphasize technical and vocational skill training, thereby realizing rational functional division.

Implement differentiated resource allocation and evaluation incentive mechanisms to bolster interdisciplinary integration. Increase investment in cross-disciplinary fields such as artificial intelligence, and integrate humanities and social science courses to cultivate interdisciplinary talents.

4.2 Improve the institutional framework for industry-education integration and establish a long-term mechanism for collaborative talent development

Improve the institutional framework for industry-education integration, clarify the rights and responsibilities of all parties, and refine mechanisms for intellectual property and revenue distribution. Drawing on Germany's "dual system", establish a cost-sharing mechanism among the government, enterprises, and universities; incentivize enterprise participation through government subsidies and tax incentives to facilitate the commercialization of technologies.

Establish a long-term support mechanism for industry-education integration training bases by incorporating corporate projects and technologies; strengthen government coordination to build a resource-sharing innovation network and a talent supply-demand matching platform, and establish cross-departmental coordination mechanisms to prevent resource wastage.

4.3 Strengthen faculty capacity building and enhance talent support for policy implementation

Strengthen faculty development with a focus on recruitment, training, and evaluation: Implement a special talent recruitment program for AI educators; flexibly engage industry experts to enhance faculty practical experience; and

establish a tiered, categorized, and customized training mechanism.

Establish an AI teaching innovation fund and create a faculty development community; reform the faculty evaluation system by incorporating AI teaching innovation into performance metrics, and establish diversified promotion pathways along with special awards for teaching reform.

4.4 Establish ethical governance and risk prevention mechanisms, and improve the technical application standards system

Li Mengmeng and Wu Weimin point out that strengthening ethical norms and addressing security issues are key to overcoming barriers to the integration of intelligent technologies and education [6]. The supply of cybersecurity policy tools should be increased, and legal and regulatory measures should be adopted to resolve security and trust issues in technology applications. Develop the *Ethical Guidelines for AI Applications in Higher Education* to clarify the boundaries of AI use and standards of academic integrity, while simultaneously encouraging universities to formulate institutional implementation rules to form a multi-tiered ethical governance system.

Improve the AI data governance framework to clarify data rights, responsibilities, and security standards; strengthen algorithm auditing and bias detection to establish an educational data protection system; and establish a risk monitoring system and ethical review mechanism to foster a healthy application ecosystem.

5 Conclusion

Artificial intelligence is fundamentally transforming the development model of higher education. This study traces the evolution of AI policies in higher education from 2000 to 2025, identifying four distinct phases of development. Policy tools have become increasingly diverse, governance mechanisms have moved toward collaborative integration, and documents such as the *Development Plan for the New Generation Artificial Intelligence* have formed the top-level design. However, structural issues persist in policy implementation, including homogenization of disciplinary structures, inadequate industry-education integration, lagging faculty development, and the absence of an ethical governance framework, all of which require comprehensive optimization. The policy optimization pathways proposed in this study aim to resolve these challenges and promote deep integration.

Looking ahead, policies must continue to be refined. Liu Yangxi proposes establishing a differentiated education system based on diverse stakeholders and developing a systematic, tiered, and interdisciplinary implementation plan [7]. Top-level design should be strengthened, specialized plans formulated, and interdepartmental coordination mechanisms established. Universities should be guided to pursue differentiated development, long-term mechanisms for collaborative education between schools and enterprises should be developed, emphasis strengthened on teachers' professional competencies, and a standardized ethical framework put in place. Only by promoting the systematic optimization of policies and mobilizing the enthusiasm of diverse stakeholders can deep integration be achieved, thereby providing support for the construction of a leading nation in education and science and technology.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Tan J C. National policies and future responses to the educational applications of generative artificial intelligence[J]. Research on Education and Teaching, 2025, 39(3): 1-14.

[2] Teng F, Sun Y. The evolution, issues, and recommendations of China's AI education policies: an analysis based on policy texts from 2000 to 2025[J]. Educational Science Research, 2025(6): 52–58.

[3] Dwivedi Y K, Hughes L, Ismagilova E, et al. Artificial intelligence (AI): multidisciplinary perspectives on

emerging challenges, opportunities, and agenda for research, practice, and policy[J]. International Journal of Information Management, 2019(57): 101994.

[4] Sun P, Jiang Y. A decade of review and reflection on China's smart education policies[J]. Modern Educational Technology, 2022, 32(12): 68–75.

[5] Yu H. Reflections on whether ChatGPT should be banned in academia from the perspective of education and teaching[J]. Frontiers in Psychology, 2023(14): 1181712.

[6] Li M M, Wu W M. Text analysis of smart education policies from a policy instrument perspective[J]. Software Guide, 2023, 22(1): 79-87.

[7] Liu Y X. China's explorations and development prospects for artificial intelligence education across all educational stages and general education for the entire society[J]. Research on Lifelong Education, 2025(5): 35-42.

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