Constructing a Multi-Dimensional Governance System for the Application of Generative AI in Schools: Policy Analysis and Implications of the "Australian Framework for Generative AI in Schools"

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Abstract: With the rapid development of generative artificial intelligence (AI) technology in the field of education, global educational systems are facing unprecedented opportunities and challenges, urgently requiring the establishment of comprehensive, flexible, and forward-looking governance solutions. The "Australian Framework for Generative AI in Schools" builds a multi-dimensional governance system covering aspects such as teaching and humanistic care, fairness and transparency, and accountability and security. Based on 22 specific principles and six core elements, it emphasizes a human-centered design concept, adopts a principle-based flexible structure, focuses on fairness and transparency, and stresses accountability and security. The framework provides valuable references for the use of generative AI in China's education system and holds significant importance for promoting educational modernization and cultivating innovative talents adapted to the era of artificial intelligence.

Keywords: Generative AI; Governance system; Educational application

1. Introduction

The rapid development of generative artificial intelligence (AI) technology is profoundly changing the education field, bringing unprecedented opportunities and challenges to teaching and learning. This transformative technology reshapes traditional education models and learning experiences through its powerful content generation, personalized learning, and intelligent assistance capabilities. However, along with these potential benefits, global education systems face unprecedented governance pressures. This calls for a comprehensive, flexible, and forward-looking governance framework to guide the responsible use of generative AI in education

while maximizing its potential benefits [1].

Against this backdrop, the "Australian Framework for Generative AI in Australian Schools" (Framework), released by the Australian Education Department, has important policy implications and demonstrative effects. The development of the Framework reflects the Australian government's commitment to the responsible adoption of emerging technologies in the education system and its strategic intent to seek leadership in the global governance of AI in education. The core objective of the framework is to provide clear guidance for school systems, teachers, and school administrators to safely and effectively utilize generative AI technologies while supporting better educational outcomes.

2. Analysis of the framework for applying generative AI in Australian schools

2.1. Background and objectives of the framework

The background of the framework's development is deeply rooted in the dual challenges of technological change and social transformation currently facing the global education sector. In recent years, the rapid growth of generative AI technologies has begun to reshape the education ecosystem, bringing unprecedented opportunities and challenges to teaching methods, learning experiences, and education management. In this context, how to effectively utilize generative AI technologies to enhance educational effectiveness while addressing the ethical, privacy, and security issues that may arise from the application of the technologies has become a major issue for education policymakers. As a pioneer in educational innovation, Australia recognizes the urgency of developing a comprehensive and systematic policy framework to guide the application of generative AI in school education, which has directly led to the introduction of this framework [2].

The core objective of the Framework is to provide Australian school systems, teachers, and school administrators with a comprehensive guideline for the safe and effective use of generative AI technologies while ensuring that their application supports and enhances educational outcomes. Specifically, the framework aims to achieve the desired impact in the following ways: first, through clear principles and guidance, it helps educators balance innovation and risk in the application of generative AI, ensuring that technology applications always serve the fundamental goals of education. Second, the framework works to develop students' AI literacy so that they can critically understand and use AI technologies to prepare for the digital society of the future. Furthermore, by emphasizing core values such as ethics, equity, and privacy, the framework aims to build a responsible AI education ecosystem that prevents technology applications from exacerbating existing educational inequalities or creating new discrimination. Finally, by providing a flexible and comprehensive policy tool, the framework aspires to incentivize continued educational innovation while providing useful references and lessons for other countries to follow when developing similar policies. Thus, the framework is not only a guide for the application of technology but also a strategic document aimed at shaping education in the future [3].

2.2. Overview of the structure and content of the framework

The framework adopts a multi-layered and systematic structural design that aims to comprehensively cover all key aspects of generative AI applications in education. The core of the framework consists of six main elements, namely: teaching and learning, human and social well-being, transparency, fairness, accountability, and privacy and security. These six elements reflect not only the fundamental goals and values of education but also key ethical and practical considerations in the application of AI technologies. At the same time, these elements do not exist in isolation from each other but are interrelated and mutually supportive.

Based on the six core elements, the framework is further refined into 22 specific principles that provide more detailed guidance for educators and policymakers. The design of these principles follows a hierarchical progression from macro to micro, from concept to practice. For example, under the core element of human and social well-being, the framework includes the macro-level principle of "respect for human rights" as well as the more operational principle of "promoting diversity of perspectives"; under the core element of "human and social well-being," the framework includes the principle of "respect for human rights" as well as the more operational principle of "promoting diversity of perspectives." "Under the "Teaching and Learning" element, the principles cover ensuring that AI positively impacts teaching and learning outcomes, fostering students' AI literacy, and balancing AI applications with human cognitive development, reflecting policymakers' comprehensive considerations of the central role and potential risks of AI technologies in education. This design not only provides clear guidance for policy implementers but also leaves room for the interpretation and expansion of new scenarios that may arise in the future. This structural design reflects the comprehensive, systematic, and resilient policy response strategy adopted by Australian policymakers in the face of the complex issue of AI application in education [4].

2.3. Implementation and evaluation mechanisms of the framework

At the implementation level, the framework provides a series of specific application guidelines designed to ensure that the framework can be effectively implemented in the school system. These guidelines cover the entire process from AI technology selection to specific applications. At the technology selection stage, the framework emphasizes the importance of a comprehensive assessment of AI tools, including their educational effectiveness, ethical implications, data security, and other dimensions. In addition, the framework also places special emphasis on the key role of teacher training, proposing the establishment of a continuous teacher professional development program to enhance educators' AI literacy and application capabilities. This not only helps to ensure the effective use of AI technology but also enhances the leading role of teachers in AI-assisted teaching, thus upholding the essence and value of education [5].

In terms of the assessment mechanism, the framework has designed a multi-level and continuous assessment system. This system includes two main components: regular self-evaluation and external evaluation. At the level of self-assessment, the framework requires schools to set up an internal monitoring mechanism to regularly collect and analyze data on AI applications, and assess their impact on teaching quality, student performance, teachers' workload, and other aspects. This self-assessment mechanism can help schools identify and solve problems promptly and continuously optimize their AI application strategies. At the level of external evaluation, the framework proposes the establishment of an independent expert evaluation committee to conduct a comprehensive review of the effectiveness of the framework's implementation regularly. This external evaluation not only provides a more objective and comprehensive assessment but also helps to identify common challenges and best practices across schools and districts in the implementation process. It is worth noting that the Framework places special emphasis on the openness, transparency, and wide dissemination of the evaluation results to facilitate experience sharing and mutual learning among schools. Through this dynamic and multifaceted assessment mechanism, the framework aims to establish a cycle of continuous improvement to ensure that the application of AI technologies in education remains optimal and can respond to changes in technological development and educational needs promptly [6].

3. Conclusion and implications

The Framework demonstrates a comprehensive, systematic, and forward-looking approach to policy. It builds a multi-dimensional governance system for generative AI educational applications through six core elements and 22 specific principles. Its salient features include: a human-centered design concept that emphasizes the essence of education and humanistic values; a flexible structure based on principles that adapts to the rapid development of the technology; a focus on fairness and transparency that builds a trustworthy AI education ecosystem; and an emphasis on accountability and safety that balances innovation and risk. The framework also features a dynamic adjustment mechanism and multi-party participation, reflecting the policymakers' deep understanding of the complexity of AI education applications. This comprehensive and adaptive policy design provides a valuable reference for the governance practices of global education systems in the age of AI[7].

Drawing on Australia's experience, China can advance policymaking for AI education applications in the following ways:

First, building a systematic policy framework. China should establish a multi-level and multi-dimensional policy system for AI education application, covering the national, provincial, and local levels. At the national level, core elements similar to the Australian framework can be established, such as pedagogical innovation, ethical norms, data governance, equity and transparency, and safety and accountability. At the provincial level, implementation rules can be set up according to local characteristics, such as focusing on the application of cutting-edge technologies in economically developed regions and paying more attention to infrastructure construction and educational equity in less developed regions. The local level can then focus on specific implementation strategies and pilot programs. This layered design ensures policy uniformity while accommodating local differences.

Second, adopting a flexible policy design based on principles. Considering China's vast size and uneven regional development, policy design should be flexible enough. A series of core principles, such as "technology serves the essence of education," "safeguarding educational equity," and "maintaining data security," can be formulated, drawing on the practice of Australia. Under these principles, each region can formulate specific implementation strategies according to its conditions. For example, in terms of AI curriculum, schools can be given a certain degree of autonomy, allowing them to design curriculum content and teaching methods according to the needs of students and teacher conditions.

Third, strengthening the ethical norms of AI education application. It is recommended that a national-level AI education ethics committee be established with provincial and local branches. The responsibilities of this committee include: formulating ethical guidelines for AI educational applications, assessing the ethical impact of new technology applications, handling ethical disputes, and organizing related research. At the same time, AI ethics should be incorporated into the curriculum system of compulsory education and higher education, and ethical education teaching materials should be developed to suit different school years. In terms of teacher training, a mandatory course on "AI ethics in education" can be established to ensure that educators have the necessary ethical awareness and judgment ability [8].

Fourth, establishing a dynamic evaluation and adjustment mechanism. A national AI education application assessment center should be set up to collect and analyze national application data regularly. Assessment indicators should cover multiple dimensions such as teaching effectiveness, learning outcomes, educational equity, technical reliability, and ethical implications. Based on the assessment results, a report on the development of AI education applications will be released annually to provide a basis for policy adjustments. At the same time, a rapid response mechanism should be established to make timely policy interventions in

response to problems identified in the assessment.

Fifth, promoting multi-party participation in the policy formulation and implementation process. A standing advisory body is established, composed of education departments, science and technology departments, ethical experts, educators, technologists, student representatives, parent representatives, and so on. Before the policy is formulated, extensive public consultations should be organized; during the policy implementation process, regular hearings should be held to collect feedback from all parties.

In addition, "AI education innovation experimental zones" can be set up to encourage cooperation among local governments, schools, enterprises, and research institutions to explore innovative models and provide a practical basis for the development of national policies.

Finally, the monitoring and accountability mechanism for policy implementation should be strengthened. An inter-departmental supervision working group is established to regularly check the implementation of the policy. Reporting and complaint channels are set up to identify and deal with problems in policy implementation promptly. Policy and financial support are provided to districts and organizations that excel in the application of AI in education; accountability measures are taken for those with serious problems.

Through these multidimensional and targeted policy measures, China can build a governance system for AI education applications that meets national conditions and is rich in characteristics. This will not only promote the process of education modernization, but also lay a solid foundation for the cultivation of innovative talents adapted to the era of AI, and thus enhance China's comprehensive strength in the global AI competition.

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