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The Role of Principals in Driving Teaching Reform and Innovation: A Transformational Leadership Perspective

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Abstract

Under the guidance of The Outline of the Plan for Building a Powerful Nation in Education (2024–2035) issued by the Chinese government, artificial intelligence technology is deeply embedded in the basic education system. As a key role in school governance, the leadership of principals has a direct impact on the effectiveness of Artificial intelligence (AI) teaching reform. This paper focuses on Chengdu, a representative city in southwest China. Using a semi-structured focus group interview method, it conducts a field survey of principals and senior managers of 20 primary and secondary schools to explore the leadership behavior, collaboration mechanism and institutional support path of principals in the AI teaching reform. The study found that the current AI teaching reform faces three prominent challenges: first, the cognitive bias of artificial intelligence hinders the formation of educational consensus; second, the fuzzy positioning of the principal's role leads to a weak collaboration mechanism; and third, the disconnection between teacher capacity and resource construction restricts the implementation of technology. Based on the analysis of transformational leadership theory, the study points out that principals need to strengthen vision leadership, emotional motivation and organizational empowerment, promote the improvement of teachers' AI literacy and school structural collaboration, and provide action strategies and policy recommendations for the deep integration of educational technology and teaching goals. The research results provide theoretical support and practical reference for promoting the digital transformation of education with Chinese characteristics and the construction of principal leadership.

Keywords: Artificial Intelligence, Principal Leadership, Transformational Leadership, Teaching Reforms, Development Strategy

Introduction

Driven by globalization and technological revolution, the strategic focus of China's education development has shifted from previous scale expansion to a historic transformation centered on quality improvement. As an important programmatic document for China's education reform in the new era, the Outline of the Plan for Building a Powerful Education Country (2024–2035) (hereinafter referred to as the Outline) systematically proposed for the first time the construction of an education system that serves Chinese modernization, with the goal of building a "powerful education country" (Ministry of Education of the People's Republic of China, 2025). This indicates that China's education development has entered a strategic breakthrough stage characterized by qualitative leaps and structural optimization.

The Outline clearly proposes to "implement the national education digitalization strategy" and "promote artificial intelligence to support education reform," which not only provides a clear implementation path for intelligent technologies to empower educational reform but also marks that education modernization is entering a new stage of deep intelligence. Against this backdrop, the role of principals has also undergone profound changes, gradually transforming from traditional administrative managers to core leadership figures in driving school reform and innovation (Corrigan & Merry, 2022). However, the advancement of education reform still faces many practical challenges, especially regarding how to stimulate teachers' initiative, build effective collaboration mechanisms, and realize innovation in teaching technologies, all of which urgently require more in-depth research and practical support.

At present, education is undergoing a fundamental transformation from traditional knowledge transmission to the cultivation of 21st-century core competencies. As key drivers of school change, principals are required to possess forward-looking leadership capabilities. Transformational leadership theory offers a crucial perspective for understanding the role of principals in a technology-driven context. Existing research shows that transformational principals can effectively promote the application of educational technologies and enhance teachers' intrinsic motivation and teaching engagement through intellectual stimulation, visionary motivation, and emotional support (Meyer et al., 2023). However, there is still a lack of empirical research on how principals can collaborate with teachers to introduce artificial intelligence teaching technologies in the context of China's basic education, resulting in an implementation gap between education policies and school practices—particularly in teacher professional development, organizational coordination mechanisms, and the construction of school innovation culture.

Therefore, this study focuses on Chengdu, a representative city in southwest China, aiming to explore how middle school principals can effectively collaborate with teachers during the digital transformation of education and promote the implementation and application of AI teaching technologies. Through semi-structured focus group interviews with middle school principals in Chengdu, this study will deeply analyze principals' leadership behaviors, collaboration strategies, and institutional support mechanisms in the context of AI-driven education reform, in the hope of providing theoretical references and practical insights for enhancing school leadership and integrating educational technologies. By addressing this research gap, the study contributes to a deeper understanding of leadership-driven

educational innovation and offers practical guidance for bridging the policy-practice divide in AI-based teaching reform.

Literature Review

AI Technologies for Education

AI usually refers to intelligence displayed by machines rather than humans, which is different from the consciousness and emotions possessed by humans and animals (Ahmad et al., 2021). As a strategic technology leading a new round of scientific and technological revolution and industrial transformation, AI is profoundly affecting all walks of life at an unprecedented speed and breadth, reshaping the labor force structure and knowledge production system, and accelerating the transformation of talent training models. In the field of education, AI not only provides new impetus for teaching, but is also widely regarded as a key driving force for the fourth educational revolution.

As the global application of artificial intelligence in education continues to deepen, China has also continued to send positive signals at the policy level and systematically promoted the digital transformation of education. In recent years, China has successively issued a number of policy documents to provide clear strategic guidance and institutional guarantees for the promotion and application of AI in the field of education (see Table 2.1). Its prospects include the design of personalized learning paths, the development of dynamic evaluation systems, and the promotion of teaching experiences with substantial interactions in online, mobile or hybrid learning (Zhang & Aslan, 2021). Taking Intelligent Tutoring Systems (ITS) as an example, AI's modeling capabilities have been systematically applied to the development of responsive and adaptive teaching mechanisms, the construction of personalized learning environments, and the effective alleviation of the problem of insufficient teaching resources in remote or under-staffed areas.

In addition, the potential of AI in affective computing is also gaining increasing attention. The latest research shows that emotions play an increasingly important role in cognition, perception, and learning (Zhai et al., 2021). At present, there are many learning models that attempt to integrate emotional elements with AI, such as biofeedback, role-playing, immersive learning, and gamification. These methods not only emphasize the use of technical means to enhance the immersion and fun of learning, but also promote the transformation of education from standardization to intelligence and humanization. Although AI is widely used in education, its impact remains controversial. Holmes and Tuomi (2022) pointed out that teachers and education administrators need to clearly understand the potential and boundaries of artificial intelligence in order to effectively guide its integration and practice in education and truly realize educational innovation supported by technology.

Table 2.1
China's main policies on the integration of AI technology in education

Release Year	Policy Name	Core content keywords	Relevance to this study
2017	Next Generation Artificial Intelligence Development Plan	Education is the key application scenario, promoting AI+education	Laying the strategic background for the introduction of AI teaching in primary and secondary schools
2018	Education Informatization 2.0 Action Plan	Improve teachers' information literacy and build an intelligent environment	Emphasize the deep integration of teachers and technology
2020	"Opinions on Strengthening the Construction of Primary and Secondary School Teacher Teams in the New Era"	It is suggested that teachers need to master intelligent teaching tools	Empowering principals to improve teachers' adaptability to AI teaching
2021	"14th Five-Year Plan" National Education Development Plan	Accelerate the development of smart education and encourage regional innovation pilot projects	Support local middle schools to explore AI teaching integration mechanisms
2023	Strategic Action for Digital Education	Promote "education reform in the intelligent era" and build a smart campus	Clarify the principal's leadership responsibilities in digital transformation

Principal Transformational Leadership

In recent years, the role of school leadership in promoting the integration of educational technology has attracted increasing attention. Generally speaking, leadership is understood as a process of influencing a group to achieve common goals (Ruloff & Petko, 2022). In the context of digital transformation, digital leadership is not limited to the introduction of technological equipment, but also includes the effective connection of organizational goals with technological tools, organizational structure, and personnel capacity building to achieve meaningful systemic changes (Ruloff & Petko, 2022). Especially in the context of AI entering campus teaching, the challenges faced by school administrators are more complex than before, including teachers' insufficient ability in information technology (ICT), lack of systematic ICT training, and limited access to key resources (A'mar & Eleyan, 2022). Some studies have pointed out that leadership is one of the key factors in whether schools can effectively implement emerging educational technologies. The leadership style of the

principal has a direct impact on teachers' willingness to adopt technology and the implementation of the school's digital strategy (Tyson & Sauers, 2021).

Among the many leadership styles, transformational leadership is considered to be more effective in promoting the rapid integration of technology than transactional leadership (Ruloff & Petko, 2022). This leadership style emphasizes stimulating teachers' initiative and innovative spirit by inspiring vision, providing support and personalized incentives (Hyseni Duraku & Hoxha, 2021). As a change-oriented leadership style, transformational leadership was first proposed by Burns (2012) and refers to "the process in which leaders and followers help each other to achieve higher levels of morality and motivation." In the field of education, transformational leadership not only emphasizes the leading role of principals at the strategic level, but also emphasizes how to mobilize the enthusiasm of individual teachers and teams through motivation and empowerment, so as to achieve innovation in teaching practice and improve the overall effectiveness of the school (Hallinger, 2003; Leithwood, Jantzi & Mascall, 2002).

As the research deepened, scholars proposed several structural models of transformational leadership. Longshore (1987) divided it into three core levels: vision building, individual support, and intellectual stimulation, emphasizing how leaders can guide teachers' thinking transformation and provide emotional and cognitive support by building a common vision for school development. Yukl (1999) further developed this theory and proposed four dimensions of transformational leadership: personalized care, intellectual stimulation, idealized influence, and inspiring motivation, constructing a clearer analytical framework for leadership behavior. Research shows that transformational principals can not only enhance teachers' intrinsic motivation and teaching input, but also indirectly promote students' positive learning behaviors and assessment participation (Hyseni Duraku & Hoxha, 2021).

As Corrigan and Merry (2022) pointed out, principals can adopt a variety of leadership styles in practice according to specific situations, such as autocratic, laissez-faire, democratic, teaching expert and transformational leadership, showing the diversity and flexibility of educational leadership. At present, more and more studies have begun to focus on how principals can have a profound impact on school performance, teacher motivation and technological change by building their professional leadership identity. In addition, the participation of principals is not only reflected in specific management affairs, but also in how they actively participate in dialogues related to artificial intelligence and build organizational structures to support the introduction and implementation of AI (Tyson & Sauers, 2021). Because this study believes that for AI teaching reform , the transformational leadership of the principal not only affects the school's pace of technology adoption, but is also directly related to the realization of reform goals, processes and results.

Transformational Leadership Studies in Chinese Context

Although transformational leadership was originally born in a non-educational context, it has gradually attracted widespread attention from educational researchers in recent years, especially in the context of school governance and teaching reform. Researchers have further expanded the applicability of transformational leadership theory in the field of education by combining it with school organizational structure and leadership functions. Over the past four decades, Western countries have conducted systematic and in-depth explorations of

transformational leadership and gradually established analytical dimensions that are more adaptable to educational contexts. For example, Li (2022) proposed seven key dimensions applicable to school contexts: (1) building school vision and goals, (2) providing intellectual stimulation, (3) providing individual support, (4) demonstrating best practices and organizational values, (5) establishing high performance expectations, (6) creating a positive school culture, and (7) restructuring organizational structures to promote teacher participation in school decision-making. This integrative model effectively enhances the explanatory power and operability of transformational leadership theory in school change.

In China, since its introduction thirty years ago, transformational leadership theory has gradually developed into an important perspective for educational leadership research and has received great attention from local education researchers. In recent years, with the continuous advancement of the country's basic education reform, transformational leadership has become an important theoretical tool for interpreting how principals promote school change. Based on complex survey data from a province in China, Li and Liu (2022) used a three-level structural equation model (Three-Level SEM) to deeply analyze the relationship between principals' transformational leadership behavior and teachers' leadership and self-efficacy. The study found that the principal's transformational leadership behavior significantly positively predicted teachers' leadership behavior and self-efficacy, indicating that the principal's transformational leadership can not only stimulate teachers' professional initiative, but also effectively enhance their teaching confidence.

At the same time, Zhang et al. (2022) conducted a large sample survey of middle school principals in multiple provinces in China and found that transformational leadership has a positive impact on the five core dimensions of the teacher professional learning community, including: the establishment of common goals, the development of collaborative activities, the collective focus on student learning, the promotion of de-hierarchical practices, and the cultivation of reflective dialogue. This finding once again confirms the key role of transformational leadership in promoting teacher professional development and activating organizational learning mechanisms, which is particularly applicable to the new context of AI-oriented teaching reform.

More importantly, in the Chinese secondary school governance environment with a strong test-oriented and clearly hierarchical administrative system, transformational leadership has shown a strong "bridging" effect - on the one hand, it can respond to the macro requirements of national policies for school reform and technological transformation, and on the other hand, it can empower teachers at the micro level and stimulate their endogenous motivation to actively participate in educational innovation. Therefore, transformational leadership is not only a strategic management behavior, but also a value-oriented cultural construction process, which is particularly suitable for the redefinition of leadership and mechanism innovation in the context of the current digital transformation of education.

Outstanding Problems and Challenges in Current AI Teaching Reform

As one of the first "smart education demonstration areas" in China , Chengdu has actively responded to the national education digitalization strategy and launched the "artificial intelligence + teaching" pilot school construction project in 2024 (People’s Daily, 2025). The first batch of 35 primary and secondary schools were selected to carry out exploratory

practices (People's Daily, 2025). These schools cover primary, junior high and high school stages, and carry out systematic innovation in multiple dimensions such as resource development, teaching design, classroom implementation, homework design, teaching evaluation, and teaching and research activities, aiming to form typical experiences that are "implementable and really effective".

From October to November 2024, the research team conducted in-depth interviews with principals and senior managers of 20 primary and secondary schools in Chengdu using online semi-structured interviews to obtain their real experiences and leadership perceptions in educational practice. The sample covers urban, suburban and rural schools to ensure diversity and representativeness of school types and backgrounds.

The interview content mainly revolves around the following aspects: (a) school profile, including school type, public and private attributes, scale and educational vision; (b) the development of the school in teaching reform and technology application in the past year; (c) the main leadership challenges faced by principals in promoting AI teaching, such as insufficient teacher participation, uneven resource allocation, and difficulty in implementing technology; (d) how principals motivate teachers, create a positive reform atmosphere, and build an organizational support system through transformational leadership strategies; (e) teacher professional development support mechanisms, including teacher training, cooperative exchanges and performance evaluation; (f) the impact of policy, institutional or cultural factors on principals' leadership behavior; (g) principals' strategic planning and leadership prospects for future AI teaching reforms; (h) practice-based leadership reflections and suggestions for educational policies or peer principals. Through this round of interviews, the study aims to deeply understand how principals can exert empowering, motivational and vision-oriented leadership traits in actual contexts to promote the in-depth and practical reform of AI teaching.

AI Cognitive Bias Hinders the Formation of Educational Consensus

Although the term "artificial intelligence" has long been widely known in mass communication, in reality, many principals and teachers still have three major cognitive deviations: first, "deification" of AI, believing that it is a high-tech technology that can only be mastered by a few technical elites and lacks teaching accessibility; second, "narrow" understanding, only regarding AI as an extension of traditional computer science; third, the "generalization" misunderstanding, vaguely classifying all scientific and technological innovations into the category of AI. These cognitive biases not only affect the school's acceptance of AI technology, but also make it difficult for principals to form a clear direction when formulating teaching reform strategies, weakening the enthusiasm of teachers to participate and the basis for organizational collaboration. In the interview, many principals expressed concerns such as "teachers dare not touch it", "parents are worried", and "schools cannot define the positioning of AI courses", reflecting the direct impact of cognitive bias on practical implementation.

Principals are Unclear about their Roles in AI Teaching Reform, Making Collaboration more Difficult

At present, although most principals are aware of the importance of AI technology in educational reform, they still have unclear cognition of the role they should play. Some

principals are still in the traditional role of "project managers" and tend to entrust AI teaching tasks to information teachers or outsourcing agencies, lacking systematic coordination and strategic vision. Transformational leadership emphasizes that principals should empower teachers through vision guidance, emotional motivation and intellectual stimulation to jointly build a school transformation ecology. However, the interview results show that most principals are still immature in the coordination mechanism, only staying at the level of "task allocation" or "activity promotion", lacking an organizational path for deep integration. This collaborative dilemma limits the organic embedding of AI technology in the teaching system.

The Teacher Capacity and Resource Construction are out of Sync, and the Principal Support Mechanism Needs to be Strengthened

In the AI reform, principals often face the phenomenon that teachers "cannot teach, dare not teach, and are unwilling to teach." The root cause is that teachers' AI literacy is seriously insufficient. Most teachers, especially the aging group, have little understanding of concepts such as deep learning and neural networks, and lack the ability of project-based learning and large-unit teaching. This directly leads to "talking but not practicing" in the implementation of artificial intelligence education, and the classroom content is superficial and teaching resources cannot be used effectively. In the focus interviews, many principals admitted that "teachers are the biggest shortcoming", and pointed out that the current teacher training mechanism is fragmented and insufficiently invested, making it difficult to form a sustainable teaching support system. If the principal cannot build a systematic teacher support mechanism, his or her transformative power will be greatly reduced.

Insufficient Basic Conditions and Weak External Resource Support Restrict the Implementation of Reforms

Artificial intelligence teaching is highly dependent on basic hardware, software platforms and experimental environments, but the current contradiction of "there are courses but no scenarios, and there are policies but no equipment" is common in primary and secondary schools. In the interviews, principals of suburban and rural schools in particular pointed out that schools lack computing power equipment, the network environment is unstable, the threshold for using municipal sharing platforms is high, and actual teaching is difficult. At the same time, social forces are still weak in education, and corporate participation is limited. AI tools and resources have not yet been deeply adapted to basic education. Although principals are willing to promote it, they are often trapped in the resource dilemma of "no place, no budget, and no one to lead", making it difficult for principals to effectively implement their leadership strategies.

There is a Disconnect between Top-Level Design and School-Based Practice, and the Principal's Ability to Innovate Systems Needs to be Improved Urgently

Although the Ministry of Education has issued a number of policy documents on AI-enabled education, the phenomenon of "clear outline - vague path - difficult implementation" still exists. On the one hand, the policy emphasizes "incorporation into local courses", but on the other hand, there is a lack of unified national teaching standards and assessment mechanisms, which leads to "separate exploration" in schools across the country, with scattered directions and uneven quality. In the interviews, principals generally expressed institutional anxiety of "no basis to rely on". At the same time, in terms of institutional innovation, many principals are still limited to the single idea of "adding projects" and "setting

up courses", and lack a deep reconstruction of school-based systems and organizational culture. This not only affects the sustainability of teacher participation, but also weakens the systematic and long-term nature of AI teaching reform.

Key Strategies and Behavioral Practices of Principals as Transformational Leaders in Promoting Reform

Carry Out Organizational Co-Creation Oriented towards "Education + AI" to Break Down Technology Myths and Cognitive Barriers

In response to the cognitive biases of teachers and managers regarding artificial intelligence, such as "deification", "narrowing" and "generalization", the principal must first take the initiative to initiate the collective cognitive construction of the value of AI education as the school's "cognitive weathervane". This strategy emphasizes that artificial intelligence should not be viewed as a purely technical issue, but should be restored to its operability and tool attributes in the educational field. By organizing special training, setting up "Teacher AI Experience Camps", and inviting AI education experts to give lectures or introduce cases, the principal can gradually build a cognitive atmosphere within the campus that "AI is a teaching tool" and "everyone can understand and operate it", thereby enhancing the sense of identity and willingness to participate of teachers and parents.

In addition, the principal can also guide teachers to carry out collective learning mechanisms such as "reading a book together" or "school-based research groups" to promote teachers' transformation from passive information reception to active cognitive reflection. This kind of organizational cognitive co-shaping not only helps to break the mysterious imagination of technology, but also lays a value consensus and cultural foundation for teaching reform, thereby enhancing the cognitive consistency and synergy of the overall reform.

Reshape the Role of Leaders and Build a Co-Governance Teacher Collaboration Ecosystem

Faced with the problems of unclear role recognition and insufficient collaboration mechanism in the process of AI teaching reform, transformational leadership requires principals to change from the traditional role of "project manager" to "vision leader" and "system designer". Specifically, principals should take the development of school education as the overall starting point, put forward a clear vision for AI teaching reform, and stimulate teachers' enthusiasm and autonomy through systematic actions. For example, establish an interdisciplinary AI teaching innovation team, guide front-line teachers to participate in reform goal setting, curriculum design and process evaluation, and transform them from "passive executors" to "co-creators".

At the same time, the principal also needs to build a cooperative platform at the mechanism level, such as the "AI+Teaching" co-research group and the "AI Curriculum Promotion Committee", etc., to achieve the transformation of school governance from "administrative instructions" to "cooperative governance" by setting up posts, rights and responsibilities. Such organizational changes not only enhance teachers' sense of belonging and responsibility in teaching reform, but also provide a real and continuous organizational carrier for the embedding of AI technology into daily teaching.

Construct a Systematic Teacher Empowerment System to Promote the in-Depth Development of AI Teaching Professional Capabilities

When dealing with the problem of teachers "not knowing how to teach, not daring to teach, and not willing to teach", principals should get rid of the traditional path of fragmented training and single-point intervention, and turn to building a teacher professional growth support system covering the entire chain of "knowledge-ability-belief". First, in the "knowledge dimension", principals should cooperate with universities and educational technology companies to regularly organize practical learning projects such as core concepts of artificial intelligence, teaching design, and classroom cases, so that teachers can understand the underlying logic of AI teaching. Secondly, in the "ability dimension", we should focus on teachers' practical capabilities such as AI curriculum development, project-based teaching, and technology integration, and promote teachers to complete teaching attempts in real teaching situations through "learning by doing and doing by researching". Finally, in the "belief dimension", by setting up mechanisms such as "AI teaching pioneer teachers" and "teaching innovation demonstration points", we can guide teachers to establish a positive teaching identity and gradually change their resistance and avoidance of AI education.

Only when teacher capacity building and principal support mechanism are deeply integrated, can AI teaching reform move from concept to norm, and from innovation to universality.

Promote the Integration of Multiple Resources and Build a Collaborative Network of "School-Region-Society"

Artificial intelligence teaching is highly dependent on infrastructure and external resources, and it is difficult to independently support comprehensive reforms with only the school's internal resources. In this regard, principals should take the initiative to jump out of the boundaries of the campus and build a cross-subject, multi-level resource collaboration network. On the one hand, they can actively connect with government resources such as district and county education bureaus and smart campus service platforms to strive for policy support and equipment subsidies; on the other hand, they can establish a long-term cooperation mechanism with AI companies and university laboratories, introduce the latest technical tools, and jointly build experimental scenarios to enhance the technical depth of school AI teaching implementation. At the same time, promote resource sharing and teacher collaboration among schools in the region, such as establishing mechanisms such as "AI teaching consortium" and "cross-school teaching and research classes" to achieve cross-school flow of teaching content, experience and platforms.

Furthermore, the principal can guide social forces to participate in the construction of the AI education ecosystem, such as inviting technology companies to the school to carry out curriculum co-creation and promote the deep integration of off-campus projects and on-campus teaching. This kind of multi-faceted collaboration not only solves the problem of "resource islands", but also lays the institutional foundation for the extension of the principal's leadership and the open development of the school.

Activate School-Based System Innovation and Reconstruct the Endogenous Logic of AI Teaching Reform

Faced with the dilemma of clear policy direction at the national level but vague practical path, principals must play the dual roles of "system translator" and "system re-creator" to effectively connect the national top-level design with the actual situation of the school. At the

system level, principals should carry out overall design around AI teaching, such as reconstructing the teaching evaluation system, incorporating AI literacy and innovation ability into the assessment standards; establishing an "AI project incubation fund" to encourage teachers to carry out experimental courses and classroom innovation; and improving the positive incentives for AI teaching achievements in the evaluation of teachers' professional titles.

At the organizational culture level, the identity of the "digital transformation community" should be strengthened through organizational narratives and campus culture construction, so that AI teaching is no longer a lonely experiment of a few people, but a collective cause participated in by all teachers. In addition, principals should encourage institutional trial and error and dynamic adjustment, establish feedback mechanisms, and establish fine-tuning strategies to enable the school-based system to continue to evolve during the reform. This kind of institutional leadership ability is an important support for principals to cope with policy disconnection and practice fragmentation, and is also the core driving force for truly sustainable educational reform.

Conclusion: The Role of Principals in Shaping AI-Driven Educational Reform

This study takes Chengdu as a case study, focusing on the leadership role and collaborative path of middle school principals in the AI teaching reform. It is found that there are key obstacles in the current reform, such as AI cognitive bias, unclear role positioning of principals, and weak teacher support system, which directly restrict the deep integration of AI technology in the field of basic education. Through the perspective of transformational leadership, the study further points out that principals should break through the traditional administrative management paradigm and take the initiative to serve as strategic leaders, collaborative promoters and institutional builders of school reform. On the one hand, a vision-driven education community should be built to enhance teachers' recognition and participation in AI teaching reform; on the other hand, emotional incentives and capacity building mechanisms should be used to stimulate teachers' intrinsic motivation and professional growth, so as to achieve a systematic linkage between AI teaching and curriculum goals.

In addition, institutional support is also the key to ensuring the implementation of reforms. Principals need to be good at coordinating resource allocation between the Education Bureau, platform companies, and on-campus organizations, and promote the formation of a support system consisting of a trinity of "institutional design + cultural guidance + capacity building." The sustainable development of future AI teaching reforms must rely on the transformation of principals' leadership behaviors, optimization of organizational structures, and policy environment guarantees. This article calls for strengthening the transformational leadership of principals in the education governance system, and promoting the transformation of relevant policies to a feedback mechanism for the practical experience of front-line principals, promoting the deep integration of artificial intelligence and education and teaching, and jointly building a future-oriented smart education ecosystem.

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