

The Reform and Coping Strategies of Education Management System in the Era of Artificial Intelligence

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ABSTRACT

The rapid advancement and widespread application of artificial intelligence (AI) technology have profoundly transformed educational management concepts, models, methodologies, and implementation approaches. This article examines the transformative changes occurring in educational management systems during the AI era, particularly in areas such as management philosophies, organizational structures, teaching administration, and student management. It proposes targeted strategies to provide theoretical support and practical references for establishing an educational management framework that meets the evolving demands of the AI age, thereby advancing the modernization and intelligent development of educational administration.

KEYWORDS

Artificial intelligence; Education management system; Reform, Coping strategies

1 Introduction

In the current era, studying the transformation of educational management systems in the age of artificial intelligence holds significant practical implications. The Fourth Plenary Session of the 19th CPC Central Committee emphasized that upholding and improving the socialist system with Chinese characteristics and advancing the modernization of China's governance system and capabilities constitute major strategic tasks for the entire Party, providing new guidance and tasks for educational management. As a critical component of the national governance system, the educational management framework plays a vital role in national talent cultivation and ideological security. The "13th Five-Year Plan for Educational Informatization" proposed to basically establish an educational informatization system aligned with the goals of national educational modernization by 2020. The "China Education Modernization 2035" also mentioned the construction of intelligent campuses and the coordinated development of integrated intelligent teaching management and service platforms. As a crucial venue for talent cultivation, schools must adapt to the wave of educational informatization, leveraging advanced technologies like artificial intelligence to achieve digital-intelligent management and enhance administrative capabilities—a trend that is inevitable. Therefore, educational management needs to accelerate its transformation and intelligent upgrading, establish new data-driven management models, and comprehensively improve management efficiency and effectiveness.

2 The theoretical basis of education management system reform in the era of artificial intelligence

2.1 Artificial intelligence related theories

As a strategic technology driving the new wave of technological revolution and industrial transformation, artificial intelligence (AI) is fundamentally supported by its diverse theoretical frameworks that serve as critical technological pillars for educational management system reform. Machine learning theory, the core of AI, simulates human learning behaviors, enabling computers to acquire knowledge and optimize performance through data analysis. In educational administration, machine learning analyzes massive datasets on student learning patterns and teaching methodologies, predicting academic trajectories to inform personalized educational interventions. Deep learning, a branch of machine learning, automatically identifies data patterns through multi-layer neural network models. This technology facilitates the development of intelligent teaching systems that provide precise answers to student inquiries, functioning like AI-powered virtual tutors. Natural language processing (NLP) theory enables seamless human-computer communication through intelligent Q&A systems and voice-assisted instruction, significantly enhancing both efficiency and quality in educational interactions.

2.2 Educational management related theories

Educational management theories provide conceptual and methodological guidance for transforming educational systems in the AI era. Classical management theory emphasizes enhancing efficiency through scientific methods and

standardized processes, which in education manifests as establishing unified teaching standards, management workflows, and quality benchmarks while rationally allocating educational resources to ensure orderly operations. Behavioral science management theory focuses on human behavior and motivation, requiring educational administrators to prioritize students' learning needs, interests, psychological characteristics, as well as teachers' professional development and job satisfaction. By implementing incentive mechanisms and team-building initiatives, it aims to stimulate enthusiasm and creativity among educators and learners, thereby fostering a positive educational environment. Systemic management theory views educational administration as a complex system, emphasizing its holistic nature, interconnectedness, and dynamic characteristics. In the AI age, it is crucial to integrate teaching resources, human capital, and technological assets into an organic whole. This approach involves monitoring system-environment interactions, leveraging AI to achieve intelligent upgrades in educational management systems, promoting data sharing and collaborative operations among subsystems, and ultimately enhancing overall efficiency.

3 The reform of education management system in the era of artificial intelligence

3.1 Change of management concept: from traditional to student-centered

In the age of artificial intelligence, educational management philosophy is undergoing profound transformation, shifting from traditional teacher-centered approaches to student-focused models. While conventional education often placed teachers in dominant positions with students as passive knowledge recipients, today's AI-driven advancements enable comprehensive data collection and analysis. This empowers educational administrators to better address each student's unique needs and individual characteristics. The student-centered approach emphasizes personalized learning, tailoring curricula and teaching plans according to learners' academic progress, interests, and skill levels. For instance, AI-powered learning systems allow students to study at their own pace, with the system dynamically adjusting difficulty levels and content based on real-time learning data.

3.2 The reform of teaching management: a comprehensive innovation in content, method and evaluation

In terms of educational content, artificial intelligence has driven intelligent updates and personalized customization. With the accelerating pace of knowledge renewal, traditional textbooks often struggle to meet students' learning needs. AI can access the latest knowledge in real-time and integrate it into teaching materials. Simultaneously, it provides personalized learning resources and recommendations based on students' academic performance and interests. For instance, intelligent learning systems can suggest relevant academic papers and online courses according to students' learning history. Teaching methods are also continuously innovating, with new approaches like AI-assisted tutoring and virtual simulation education gaining popularity. AI tutoring systems simulate teaching processes to offer real-time Q&A and guidance, while virtual simulation education creates immersive learning environments through VR and AR technologies, enabling hands-on experience. By collecting data from classroom participation, homework completion, exam results, and other aspects, AI algorithms analyze students' strengths and weaknesses to provide targeted instructional suggestions. Moreover, evaluation methods have expanded beyond traditional exams to include assessments of project involvement, teamwork, and other dimensions, emphasizing comprehensive quality development and capability enhancement.

3.3 The reform of student management: the precise improvement of information, psychology and evaluation

In student information management, digitalization and intelligentization have become the prevailing trend. Traditional methods relied on paper-based archives and manual records, which were inefficient and prone to errors. Now, through establishing a digital student information management system, essential data such as basic profiles, academic performance, and disciplinary records can be electronically stored and managed. AI technology analyzes and mines this information to provide decision-making support for school operations including admissions, teaching, and career services. For instance, by analyzing students' major choices and employment trends, institutions can adjust program offerings and curriculum content to enhance employability. In mental health and behavioral management, precise interventions have been implemented. AI systems monitor daily behavioral patterns and social media activity to detect psychological issues and abnormal behaviors. For example, by tracking students' online posts, emotional expressions, and classroom performance, the intelligent system can issue early warnings about potential mental health concerns and promptly notify school counselors for intervention. By collecting performance data across various domains and applying AI algorithms for comprehensive evaluation, a holistic assessment of students' overall qualities and developmental potential can be achieved.

4 Strategies to respond to the reform of education management system in the era of artificial intelligence

4.1 Update the management concept: anchor the new direction of educational management reform

In the era of artificial intelligence, updating educational management concepts has become a crucial first move to drive systemic reforms. The intelligent, personalized, and open educational management philosophy should serve as a defining guide for the new era. The intelligent approach advocates leveraging AI technology to enhance management efficiency and scientific decision-making. For instance, using smart algorithms to deeply analyze student learning data provides precise guidance for teaching arrangements and resource allocation. The personalized philosophy focuses on individual differences, leveraging AI to tailor learning support and development plans for students. The open philosophy encourages educational management to break through traditional closed frameworks, strengthen collaboration with external forces like society and enterprises, integrate resources from multiple parties, and expand students' growth opportunities. To ensure these new management concepts take root, schools and educational institutions need to intensify publicity and training efforts. Organizing specialized training activities to comprehensively popularize the new concepts and methods of educational management in the AI era among administrators and teachers is essential. High-quality lectures and seminars should be held to help them deeply understand the essence of intelligent, personalized, and open concepts, guiding their practical integration into daily management and teaching practices. Simultaneously, diverse channels like campus media and online platforms should be fully utilized to widely promote these concepts, creating a strong atmosphere of transformation and helping all faculty and students fully recognize the importance and urgency of this conceptual renewal.

4.2 Strengthening technological integration: driving a new leap forward in intelligent education management

The deep integration of artificial intelligence (AI) technology with educational administration serves as the core driver for transforming educational management systems. AI plays a pivotal role in teaching management, student affairs, and administrative operations. In instructional management, intelligent teaching systems automate processes like smart scheduling and automated homework grading, reducing teachers' workload while boosting efficiency. For student development, AI analyzes learning behaviors and psychological states to provide personalized guidance, fostering holistic growth. In administrative management, AI-driven decision-making systems assist administrators in making scientific choices, enhancing both precision and effectiveness.

Establishing a big data platform for educational management serves as the critical foundation for effective data utilization. This platform integrates diverse school data, including student profiles, teaching metrics, and research information, leveraging advanced data analytics to deliver actionable insights for decision-making in education. For instance, by analyzing students' academic performance and behavioral patterns, it enables precise identification of learning needs and developmental trends, providing scientific guidance for educational reforms and student development strategies. Furthermore, the platform facilitates data sharing and cross-departmental collaboration, significantly enhancing the overall efficiency of educational administration.

4.3 Improve personnel quality: forge a talent team that meets the needs of the times

Conducting AI technology training for educational administrators and teachers serves as a crucial foundation for enhancing professional competence. As core members of the education management system, these professionals require mastery of essential AI knowledge and practical application skills. Through systematic training programs, they gain in-depth understanding of fundamental AI concepts, technical principles, and real-world applications while becoming proficient in relevant tools and methodologies. For instance, training them to use intelligent teaching systems and data analysis software enhances their ability to apply AI technologies in educational administration and teaching practices. Simultaneously, encouraging proactive exploration of innovative AI applications in education drives the evolution of management and pedagogical approaches. Integrating digital literacy and information security into student curricula is vital for cultivating talents adapted to the AI era. In this digital age, students must develop strong digital literacy encompassing information acquisition, analysis, processing, and application capabilities. By offering specialized courses, we can nurture students' digital thinking and innovation skills, enabling them to effectively utilize information technology for learning and communication. Concurrently, strengthening cybersecurity education enhances students' awareness and prevention capabilities, equipping them with knowledge on personal data protection and online fraud prevention. For example, incorporating rich case studies and practical exercises into curricula allows students to acquire fundamental cybersecurity knowledge and skills through hands-on practice.

5 Conclusion

The advent of the AI era has brought profound transformations to educational management systems, presenting both unprecedented opportunities and significant challenges. From updating management philosophies to integrating technological applications, and enhancing staff competencies, every aspect of this transformation represents an inevitable choice aligned with the times. Educational management systems must keep pace with modern developments by embracing intelligent, personalized, and open approaches. By deeply integrating advanced technologies and comprehensively improving staff capabilities, we can fully leverage AI's potential in education management. This will cultivate high-caliber talents meeting contemporary demands, propel educational progress toward scientific rigor, operational efficiency, and innovation, and ultimately contribute substantial educational strength to social advancement and human civilization development.

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