

THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN ENHANCING EDUCATIONAL PRACTICES AT QIJIANG DISTRICT EXPERIMENTAL PRIMARY SCHOOL

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ARTICLE HISTORY

Received: 8 June 2026

Revised: 10 June 2026

Published: 26 June 2026

ABSTRACT

Artificial intelligence (AI) has become an important driving force in promoting educational digitalization and improving teaching quality in primary education (UNESCO, 2021; OECD, 2023). This study explores the application of artificial intelligence in enhancing educational practices at Qijiang District Experimental Primary School. The research focuses on five key dimensions: AI infrastructure readiness, teacher AI competency, instructional innovation, data-driven educational management, and policy support. Through literature analysis and contextual investigation, the study examines the current status, practical value, and implementation challenges of AI integration in primary education. The findings indicate that AI technologies significantly improve instructional efficiency, support personalized learning, strengthen educational management, and promote teacher professional development (Holmes et al., 2022). However, limitations such as insufficient infrastructure, unequal technological access, inadequate teacher competency, and concerns regarding data privacy continue to affect effective implementation. The study proposes practical strategies including strengthening digital infrastructure, improving teacher training systems, establishing ethical governance mechanisms, promoting instructional innovation, and enhancing policy support. The findings provide practical references for the intelligent transformation of primary education and contribute to the sustainable development of AI-enhanced educational practices in regional schools.

Keywords: Artificial Intelligence, Educational Practices, Primary Education, Instructional Innovation, Educational Management

CITATION INFORMATION: Xiao, Y., & Siththada, T. (2026). The Application of Artificial Intelligence in Enhancing Educational Practices at Qijiang District Experimental Primary School. *Procedia of Multidisciplinary Research*, 4(6), 22.

INTRODUCTION

The rapid development of artificial intelligence has accelerated the digital transformation of education systems worldwide (OECD, 2021). In recent years, governments and educational institutions have increasingly emphasized the integration of intelligent technologies into teaching, learning, and educational management processes. Artificial intelligence technologies, including adaptive learning systems, learning analytics, intelligent tutoring systems, and educational data platforms, are gradually reshaping traditional educational models and promoting more efficient and personalized educational practices (Zhai et al., 2021).

In China, the national strategy of educational digitalization has provided strong policy support for the integration of artificial intelligence into primary education. The Ministry of Education has successively introduced policies related to educational informatization, smart campus construction, and AI-supported teaching innovation, emphasizing the importance of cultivating students' digital literacy and innovative competencies. Chongqing Municipality has actively responded to these national policies by promoting "AI + Education" initiatives and encouraging schools to explore intelligent teaching practices and educational governance models.

As an experimental school committed to educational innovation, Qijiang District Experimental Primary School has actively explored the integration of artificial intelligence into classroom teaching, educational management, and student learning support. Intelligent teaching platforms, digital resource systems, and educational data analysis tools have gradually been incorporated into teaching practices. These applications provide opportunities for improving instructional quality, enhancing educational management efficiency, and supporting personalized learning.

However, the implementation of artificial intelligence in primary education also faces multiple challenges. Teachers may lack sufficient AI-related competencies, technological infrastructure may be unevenly distributed, and concerns regarding data privacy and ethical governance remain unresolved. In addition, some educators still experience difficulties integrating AI tools into traditional teaching approaches effectively. Therefore, exploring the application of artificial intelligence in primary education has important theoretical and practical significance.

This study aims to examine the application of artificial intelligence in enhancing educational practices at Qijiang District Experimental Primary School. Specifically, the research addresses the following questions:

How does artificial intelligence support educational practices in Qijiang District Experimental Primary School?

What are the major challenges influencing the implementation of artificial intelligence in primary education?

What strategies can be adopted to improve the effectiveness of AI-enhanced educational practices?

By analyzing these questions, this study contributes to the understanding of AI application in primary education and provides practical recommendations for schools seeking to promote intelligent educational transformation (Williamson & Eynon, 2020).

METHODOLOGY

This study adopts a literature review and contextual analysis approach to examine the application of artificial intelligence in enhancing educational practices at Qijiang District Experimental Primary School. Relevant studies, policy documents, educational reports, and academic literature published between 2018 and 2025 were systematically reviewed.

LITERATURE SEARCH STRATEGY

The literature was collected from academic databases including Scopus, Web of Science, ERIC, Google Scholar, and CNKI. The search focused on studies related to artificial intelligence in education, educational digitalization, intelligent teaching, educational management, and primary school innovation. Keywords used in the search process included "artificial intelligence," "primary

education,” “educational management,” “instructional innovation,” “AI competency,” and “smart education.”

INCLUSION AND EXCLUSION CRITERIA

The literature included in this study met the following criteria:

1. Published in peer-reviewed journals, conference proceedings, or official educational reports.
2. Focused on artificial intelligence application in education.
3. Related to teaching, educational management, or student learning support.
4. Written in English or Chinese.

Studies unrelated to educational contexts or lacking theoretical and practical relevance were excluded.

DATA ANALYSIS

The collected literature and contextual information were analyzed using thematic analysis. Key themes related to AI infrastructure readiness, teacher AI competency, instructional innovation, data-driven educational management, and policy support were identified and synthesized.

1. Artificial Intelligence and Educational Practices

Artificial intelligence provides new opportunities for improving teaching effectiveness, educational management, and student development in primary education. This section discusses the role of AI in instructional innovation, personalized learning, and educational governance.

1.1 Instructional Innovation

Artificial intelligence supports instructional innovation by transforming traditional teacher-centered teaching approaches into student-centered learning models (Chiu et al., 2023). Intelligent teaching platforms can analyze students' learning progress and provide adaptive learning content according to individual learning needs. Teachers can utilize AI-supported systems to design differentiated instructional activities and improve classroom interaction.

For example, intelligent tutoring systems can automatically recommend learning materials based on students' performance levels. Adaptive assessment systems provide immediate feedback and help students identify learning difficulties in real time. These functions improve teaching efficiency and allow teachers to focus more on guiding students' higher-order thinking and problem-solving abilities.

Moreover, AI technologies support multimedia and interactive teaching environments. Smart classrooms equipped with digital whiteboards, learning management systems, and educational applications create more engaging and collaborative learning experiences. Students can participate actively in classroom activities, while teachers can monitor learning outcomes more effectively. However, instructional innovation also depends on teachers' willingness and ability to integrate technology into teaching practices. Without sufficient pedagogical understanding and technical support, AI tools may be used superficially without achieving meaningful educational improvement.

1.2 Personalized Learning and Student Support

One of the most important advantages of artificial intelligence is its ability to support personalized learning (Luckin et al., 2022). Traditional classroom teaching often adopts a uniform instructional approach that cannot fully address students' individual differences. Artificial intelligence allows schools to provide customized learning experiences based on students' learning pace, interests, and abilities.

AI-supported learning platforms collect and analyze student learning data, including learning behaviors, assignment performance, participation levels, and assessment results. Through learning analytics, teachers can identify students who require additional support and adjust instructional strategies accordingly.

For example, students with learning difficulties can receive additional exercises and targeted

guidance through adaptive learning systems, while high-performing students can access advanced learning materials. This individualized support helps reduce learning gaps and promotes educational equity.

Furthermore, AI technologies support formative assessment and continuous feedback. Students receive timely feedback on their learning performance, which encourages self-regulated learning and improves learning motivation. Parents can also monitor students' progress through digital platforms, strengthening communication between schools and families.

Nevertheless, personalized learning systems may also raise concerns regarding excessive dependence on technology and reduced face-to-face interaction. Therefore, artificial intelligence should function as a supportive educational tool rather than a replacement for teachers.

1.3 Data-Driven Educational Management

Artificial intelligence significantly improves educational management efficiency through data-driven decision-making (OECD, 2023). Educational management systems can integrate data related to student performance, teacher workload, classroom activities, and resource allocation. Through intelligent data analysis, schools are able to establish more scientific and efficient management models that support educational quality improvement.

School administrators can use AI-supported systems to monitor teaching quality, evaluate educational outcomes, and optimize school management processes. For instance, attendance analysis systems help identify absenteeism trends, while learning analytics platforms support evidence-based instructional planning. These intelligent management approaches reduce reliance on subjective judgment and improve the accuracy of educational decision-making.

Furthermore, data-driven educational management contributes to improving communication and collaboration among teachers, administrators, students, and parents. Educational data platforms allow schools to establish transparent feedback mechanisms and strengthen home-school cooperation. Parents can access students' learning progress, attendance records, and assessment results through intelligent management systems, enabling them to participate more actively in students' learning development.

At the same time, school administrators can analyze longitudinal educational data to evaluate the effectiveness of educational policies and instructional reforms. This evidence-based management model supports continuous school improvement and promotes sustainable educational development. Through real-time monitoring and dynamic analysis, schools can respond more efficiently to emerging educational challenges and improve organizational coordination.

However, the successful implementation of data-driven educational management depends on multiple supporting conditions. Schools must establish reliable data governance mechanisms, improve data literacy among teachers and administrators, and ensure ethical and secure management of educational information. Without appropriate institutional support, data-driven management may become overly technical and fail to achieve meaningful educational improvement.

In the context of Qijiang District Experimental Primary School, data-driven educational management provides important support for intelligent educational transformation. Through the integration of educational data platforms, classroom observation systems, and intelligent assessment tools, the school can improve teaching management efficiency, optimize resource allocation, and strengthen evidence-based decision-making. Therefore, data-driven educational management is regarded as an essential dimension of AI-enhanced educational practices in primary education.

1.4 Policy Support

Policy support refers to institutional regulations, leadership strategies, and educational governance mechanisms that facilitate the effective implementation of artificial intelligence in educational practices (UNESCO, 2023). In the process of educational digital transformation, policy support functions as an important organizational guarantee for promoting sustainable AI integration.

From an educational management perspective, policy support includes strategic planning, financial investment, teacher development policies, technical standards, and ethical governance frameworks related to artificial intelligence application. Effective policy support ensures that schools can implement intelligent educational practices systematically and sustainably.

National and regional educational policies have increasingly emphasized the importance of integrating artificial intelligence into educational systems. Governments encourage schools to strengthen digital infrastructure, improve teachers' digital competencies, and promote innovative teaching models supported by intelligent technologies. These policies provide institutional guidance for schools seeking to develop smart educational environments.

At the school level, leadership support plays a critical role in promoting AI-enhanced educational practices. School leaders influence teachers' attitudes toward technological innovation through organizational culture, resource allocation, and professional development opportunities. When school administrators actively support intelligent education initiatives, teachers are more likely to participate in instructional innovation and technology integration.

Furthermore, policy support is essential for ensuring ethical and responsible AI implementation. Educational institutions need to establish clear regulations regarding educational data privacy, algorithm transparency, and appropriate AI usage. Ethical governance mechanisms help schools avoid potential risks related to data misuse, technological dependency, and educational inequality. In primary education, policy support should also emphasize inclusiveness and educational equity. Schools must ensure that all students have equal opportunities to access intelligent educational resources regardless of socioeconomic background. This requires coordinated support from governments, schools, and communities.

In the context of Qijiang District Experimental Primary School, policy support provides important institutional assurance for the development of intelligent educational practices. Through strategic planning, professional development systems, and technological investment, the school can gradually establish a sustainable AI-supported educational ecosystem.

2. Challenges of AI Application in Primary Education

Despite the significant benefits of artificial intelligence, schools still encounter various obstacles during implementation. This section discusses the major challenges affecting AI-enhanced educational practices.

2.1 Insufficient Infrastructure and Technological Readiness

AI application requires stable technological infrastructure, including high-speed internet, digital devices, cloud platforms, and educational management systems. However, some schools still face limitations in technological readiness.

In certain educational contexts, outdated equipment and unstable network connectivity affect the effective operation of AI-supported systems. Unequal access to technological resources also contributes to educational inequality, especially among students from disadvantaged backgrounds. Moreover, maintaining and upgrading intelligent educational systems requires continuous financial investment. Some schools lack sufficient funding and technical support to sustain long-term AI implementation. Inadequate technical maintenance may also reduce teachers' willingness to use intelligent educational tools in classroom teaching.

2.2 Teacher AI Competency Limitations

Teachers play a central role in AI-enhanced educational practices. However, many teachers still lack adequate AI-related knowledge and practical skills. Some educators may experience difficulties operating intelligent teaching systems or integrating AI tools into lesson design.

Additionally, resistance to technological change remains a significant challenge. Some teachers may perceive artificial intelligence as a threat to traditional teaching methods or professional autonomy. Without systematic training and professional support, teachers may struggle to use AI technologies effectively.

Furthermore, differences in teachers' digital literacy levels may influence the quality of AI

implementation in classroom teaching. Some teachers can successfully integrate intelligent technologies into instructional activities, while others may rely only on basic technological functions. Therefore, improving teacher AI competency is essential for promoting sustainable educational innovation.

2.3 Ethical and Data Privacy Concerns

The use of artificial intelligence in education involves the collection and analysis of large amounts of student data. This creates concerns regarding data security, privacy protection, and ethical governance.

Educational institutions must ensure that students' personal information is protected from unauthorized access and misuse. Furthermore, schools should avoid over-reliance on algorithmic decision-making, which may unintentionally reinforce educational bias or inequality.

Ethical AI implementation requires transparency, accountability, and appropriate policy frameworks. Teachers, students, and parents should clearly understand how educational data is collected and used. Schools should also establish mechanisms to supervise the responsible use of intelligent educational technologies.

2.4 Unequal Educational Access

Although artificial intelligence has the potential to promote educational equity, unequal technological access may widen existing educational gaps. Students in economically disadvantaged regions may lack digital devices or stable internet access necessary for AI-supported learning.

In addition, differences in teacher competency and school resources may result in uneven implementation quality across schools. Educational institutions with stronger financial and technological support are often able to adopt intelligent educational systems more effectively than underdeveloped schools.

Therefore, governments and educational authorities should provide targeted support for disadvantaged schools and promote balanced educational development through equitable resource allocation and inclusive educational policies.

3. Strategies for Enhancing AI-Enhanced Educational Practices

To maximize the educational benefits of artificial intelligence, schools need to adopt comprehensive implementation strategies that integrate technological, pedagogical, managerial, and policy dimensions.

3.1 Strengthening AI Infrastructure Readiness

Schools should prioritize the development of digital infrastructure to support intelligent educational practices. This includes improving internet connectivity, upgrading digital devices, and establishing secure educational data platforms.

Governments and educational authorities should provide financial support for smart campus construction and technological modernization, particularly in underdeveloped regions. Regular system maintenance and technical support services are also essential for sustainable implementation.

3.2 Enhancing Teacher Professional Development

Teacher AI competency is fundamental to successful educational transformation. Schools should organize continuous professional development programs focusing on AI literacy, intelligent teaching strategies, educational data analysis, and digital pedagogy.

Practical workshops, collaborative learning communities, and peer mentoring systems can help teachers improve confidence and competence in using AI technologies. Teachers should also be encouraged to explore innovative instructional approaches through reflective practice and professional collaboration.

3.3 Promoting Ethical and Secure AI Governance

Educational institutions should establish comprehensive policy frameworks for ethical AI use and data protection. Schools must develop clear regulations regarding data collection, storage, access,

and usage.

Transparency and accountability should guide educational decision-making processes involving artificial intelligence. Students, teachers, and parents should participate in discussions regarding ethical AI implementation and educational governance.

Furthermore, schools should balance technological efficiency with human-centered educational values. Artificial intelligence should support rather than replace teachers' professional judgment and interpersonal interaction.

3.4 Encouraging Instructional Innovation and Collaboration

Schools should actively encourage teachers to integrate AI technologies into classroom teaching through innovative instructional models. Project-based learning, blended learning, and collaborative inquiry can be combined with AI-supported educational tools to create more engaging learning environments.

Interdisciplinary collaboration among teachers, educational technology specialists, and administrators can also strengthen AI implementation. Sharing successful teaching experiences and best practices contributes to the continuous improvement of educational innovation.

3.5 Strengthening Policy Support

Educational authorities should continue promoting AI-supported educational reform through long-term strategic planning and policy support. Policies should emphasize educational equity, teacher development, technological accessibility, and ethical governance.

In addition, schools should align AI implementation with broader educational goals and students' developmental needs. Policy support provides institutional guarantees for the sustainable development of intelligent education.

CONCLUSION

Artificial intelligence has become an important driving force in promoting educational modernization and improving teaching quality in primary education. Through instructional innovation, personalized learning support, data-driven educational management, and policy guidance, AI technologies provide significant opportunities for enhancing educational practices at Qijiang District Experimental Primary School.

The study demonstrates that artificial intelligence contributes to improving instructional effectiveness, supporting individualized learning, strengthening educational governance, and promoting teacher professional development. However, challenges including insufficient infrastructure, limited teacher AI competency, ethical concerns, and unequal technological access continue to affect implementation effectiveness.

To address these challenges, schools should strengthen AI infrastructure readiness, improve teacher professional development, establish ethical governance systems, encourage instructional innovation, and enhance policy support. Effective AI implementation requires the integration of technological advancement with educational values, human-centered teaching approaches, and sustainable educational governance.

The findings of this study provide practical references for schools seeking to promote intelligent educational transformation and contribute to the development of AI-enhanced educational practices in primary education. Future research should further examine the long-term impact of artificial intelligence on student learning outcomes, teacher professional identity, and educational equity in diverse educational contexts.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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