

A Systematic Review of the Application Status and Development Trend of Artificial Intelligence in Educational Management in the Digital Era

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Abstract: Systematically review the application situations and development trends of artificial intelligence in educational management in the digital era in this paper. According to the PRISMA 2020 guidelines, in 2016 and 2026, the relevant peer-reviewed papers selected and screened for this study were obtained from ERIC, Scopus, Web of Science and EBSCOhost Academic Search Ultimate. Based on systematic content analysis and thematic coding, this paper will explore how artificial intelligence is being applied in educational administration, leadership, student support and institutional decision-making in a review. Based on the above analysis, AI is being used for prediction analysis, operation automation, student retention monitoring, curriculum design and resource allocation. Other problems in the literature are algorithmic bias, data privacy and security, surveillance, uneven infrastructure, and a lack of AI literacy among school leaders. Braun and Clarke's six-stage process of thematic analysis is used to identify several prominent themes related to efficiency, personalisation, governance, equity and leadership transformation in this paper. Based on the above analysis, AI can be used effectively to improve educational administration only with the support of human-centred leadership, ethical governance and institutional readiness.

Keywords: Artificial Intelligence; Educational Management; Systematic Review; PRISMA Methodology; Predictive Analytics.

1. Introduction

Data-driven platforms, intelligent tools and new forms of institutional governance have entered education in the digital age. Currently, with new technologies and data, the traditional ideas of teaching and learning have been changing considerably. Among the new-generation technologies listed above, Artificial Intelligence (AI) has begun to change the administration and operation of higher education institutions and K-12 schools significantly. Although the first applications of artificial intelligence in education focused mainly on intelligent tutoring systems and personalised learning environments, many scholars have begun to explore their roles in educational administration, leadership and management, etc., at present. Early studies have also shown that although artificial intelligence is being applied to education, there are both practical applications and theoretical shortcomings; the problems are more severe at the level of institutional decision-making for intelligent systems (Holmes et al., 2019; Chen et al., 2020).

Policy institutions abroad have also pointed out that artificial intelligence in education should not be viewed as a technical tool. According to the OECD (2021), the impact of AI technology is also affected by the institutional acceptance and regulations in society, organisational adjustments, and the choices made by society. UNESCO hopes to use AI to promote all-inclusive and equitable education, but only when it is in line with human-centred values, data protection, transparency and public accountability (Miao et al., 2021; Miao & Holmes, 2023). The European Commission has pointed out that educators and school leaders need to be morally guided in their application of AI and data for teaching, learning and administration, particularly concerning privacy, fairness and human oversight (European Commission, 2022). Given the above policy outlooks, the development of AI-

driven educational management should be viewed as a problem of governance rather than merely a technical issue.

Resources, curriculum, students' achievements, policies and other provisions for educational administration are all included. In the past, the above processes were labour-intensive and did not use automated data processing or hindsight analysis. Now, machine learning algorithms, natural language processing and prediction analysis have been combined to build a new real-time decision-making and high-efficiency operating system. To reduce the workload of teachers and allow them to concentrate on improving teaching quality, AI will be employed to automate routine tasks and provide detailed analysis of student behaviour and school performance. The above technologies will change the form of governance and shift educational leadership from intuition to evidence-based reasoning. Educational leaders should learn to use data systems and, according to the goals of their schools, apply machine-generated recommendations. However, the speed of development in this area has surpassed that of the construction speed for an all-weather regulatory system, and thus institutions are facing new digital risks. With the expansion of educational networks around the world in recent years, so too has been an increasing demand for standardised applications of artificial intelligence in school management. Given the above changes, we need to determine whether AI in educational governance can improve educational management without introducing ethical or institutional risks.

Although there have been many good changes, many problems in the application of AI for educational administration still need to be solved. The construction of an intelligent platform will require more funds and new technology due to the replacement of the old administrative system; at the same time, a change in mindset among educators and staff must also occur. New ethical problems have arisen due to artificial intelligence, such as privacy risks

and algorithmic bias, and at the same time, existing educational disparities may be further aggravated. Recently, with the development of generative AI and deep learning technology, educational leaders have begun to explore how to introduce these new technologies responsibly in accordance with the ethical ideas of fairness, transparency and accountability.

With the rapid development of technology and the spread of various research in recent years, it is necessary to integrate the current research results on the application of artificial intelligence in educational administration. Organise a review of the applications, strengths and weaknesses, risks and new developments in AI for educational administration. Based on the above method, this paper will first introduce the current application situation of AI in school leadership, then identify structural and ethical problems, and finally discuss future prospects for AI-assisted school leadership.

2. Methodology and Coding Process

This study is based on a systematic review of the literature, and the PRISMA 2020 reporting guidelines will be used to improve the transparency, reproducibility and consistency of screening in this work (Page et al., 2021). Review of the application of artificial intelligence in educational administration: school management, educational leadership, student retention, resource allocation, curriculum management, institutional decision-making, etc. A recent PRISMA-based review has also employed the above steps to map the changes in educational management induced by AI (Slaitan, 2025).

Literature search was conducted in ERIC, scopus, web of science and EBSCOhost academic search ultimate. The databases listed above include educational research, management studies and other cross-disciplinary technology-related works. The search strategy uses subject terms and target-context terms in combination with Boolean operators. The main search string is: ("artificial intelligence" OR "AI" OR "machine learning" OR "predictive analytics" OR "generative AI") AND ("educational management" OR "educational administration" OR "school administration" OR "educational leadership" OR "higher education administration" OR "student retention" OR "resource allocation"). Some truncations have also been employed to derive multiple forms of the same word root, such as admin, manage, leader and predict. The operator not was used to exclude papers that focused only on medical education, engineering education, technical algorithm design or classroom tutoring without any administrative or management components.

The inclusion criteria for this study were as follows: only papers published in English between 2016 and 2026 that have been peer-reviewed or published by well-known foreign institutions and are directly related to AI applications in educational management or institutional governance were included. Excluding research focused solely on classroom teaching, studies without an explicit educational administration environment, unavailable full-text publications, and those that failed to provide empirical, conceptual or policy-relevant evidence. Eliminated duplicate entries before the title and abstract review. Filter by title and abstract, then apply the inclusion and exclusion criteria to the filtered full-text articles. The final set of studies served as the subject for thematic coding and synthesis.

Braun and Clarke's (2022) six-step process of thematic

analysis was used in this study. The first round of reading of the 18 selected studies was done to understand the purpose of the research, its methods, results and discussions. In the second stage, the first set of codes was created to collect basic information on the type of AI technology, educational level, management function, reported benefits, ethical risks and leadership implications. Thirdly, the above codes are grouped into preliminary themes, such as predictive analytics, administrative automation, resource allocation, AI governance, algorithmic bias, and leadership readiness. In the fourth stage, these initial topics were cross-referenced with the original papers to ensure that they were in line with the content of the selected literature. In the fifth stage, a theme and a name were set according to the idea. Finally, these themes are organised logically to present the current application status, structural problems and development prospects of AI in educational management.

Coding was carried out by deduction and induction. Deductive codes were developed based on previous studies of AI in education, educational leadership and digital governance, and inductive codes emerged from a close reading of the 18 selected studies. For example, codes such as "predictive analytics", "student retention", "administrative efficiency", "algorithmic bias", "data privacy", "infrastructure readiness" and "human oversight" have all been modified several times after multiple rounds of coding. To ensure the consistency of the codes, all the papers were coded twice: first, at the beginning of the first round, bibliographical and procedural information were collected; then, in a later round, analysis topics were identified. Ambiguous coding decisions were resolved by referring back to the whole text, and then it was determined whether the coded theme supported the argument or results of the paper.

3. Current Applications and Trends in AI Educational Management

Based on the synthesis of the above literature, AI applications in educational management generally fall into three categories: predictive analytics of student performance, operational automation and collaborative platforms, and strategic resource allocation. Predictive analytics has been studied and verified to some extent empirically in the literature so far. Machine learning models are now used to predict whether a student will continue studying at school, graduate, or encounter problems in their studies based on a large amount of historical data, such as past grades, GPAs, attendance records and family background (Okoye et al., 2024). The above early warning systems can help administrators and academic advisors move from a reactive punishment mode to a proactive support mode, carry out targeted interventions, increase the school's graduation rate, and promote all-round development of students.

Some of the administration can also be performed by AI. Many services for students have been added to the intelligent administrative platform so far, such as conversational AI agents, dynamic dashboards and automated scheduling systems, to reduce the burden of daily administrative work. The above tools will help the administrative staff reduce the amount of routine work and focus more on high-value strategic planning and personalised student support. Research has shown that the above collaborative tools can be used with Web technology to quickly obtain and integrate institutional data to enhance cross-departmental communication,

administrative interoperability and the scalability of institutional management (Crompton & Burke, 2023; Zawacki-Richter et al., 2019).

AI analysis can help the school leader use the funds and materials of the work more strategically in terms of resource allocation and curriculum design. Based on changes in the trend of course enrollment over a long period, facility use and demographic changes, a predictive model can be constructed to forecast future demand, and thus institutions can plan budgets and facilities more reasonably. Artificial intelligence technology has started to be used in the construction of academic programmes to provide new data-driven support for adjusting the primary curriculum in response to changes in educational requirements and demands from the workforce (Ma'mun et al., 2025). Based on the above data, the institutional governance of education will adapt to changes in society and the economy and be financially feasible.

At present, efforts are being made to build artificial intelligence in higher education for all-weather sustainability and fairness. Based on an organised study of AI applications, these technologies can improve the quality of education by creating personalised learning environments and predictive analysis systems under proper conditions; at the same time, reduced disparities may be achieved through increased accessibility and all-around support for marginalised students (Apata et al., 2026). In light of the above global educational goals, the new generation of AI management tools can offer a new platform for the long-term development of the institution and promote the cause of social equity.

4. Structural Challenges, Ethical Risks, and Leadership Implications

Although the operating advantages of artificial intelligence in educational administration have been widely published, an all-weather examination has shown some deficiencies in the current promotion efforts. The first of these is the problem of data privacy and surveillance. In order to achieve good results, AI systems for educational administration need to continuously collect and process a large amount of private data on students and schools. Collection and storage of this data have serious problems in terms of informed consent, digital surveillance, and the risk of misuse of personal information. Machine-learning models that have been trained on historical institutional data may have also absorbed and spread existing societal biases. If the admission and resource allocation algorithms reproduce the existing inequalities, they will systematically disadvantage marginalised student groups and fail to achieve the goal of equitable education for all (Akgun & Greenhow, 2022; García-Carreño, 2025). Recently, research on generative artificial intelligence (AI) in education has explored how AI systems can assist with academic planning and content creation, but at the same time, problems such as authorship, data origin, intellectual property rights, lack of transparency and accountability have arisen (European Commission, 2022; García-Carreño, 2025; Miao & Holmes, 2023). It is difficult to verify the accuracy of the information in the administrative report or policy draft generated by an AI system, and consequently, we do not know who will bear legal liability for the resulting decisions. In addition, if a predictive model labels a student as being at risk due to missing or biased historical data, the administrative intervention may stigmatize the student and thus strengthen a self-fulfilling prophecy of poor performance (Akgun &

Greenhow, 2022; Okoye et al., 2024). For this reason, AI-assisted management should adopt a human-in-the-loop governance model and, after being recommended by a machine, approved by educational staff, take corresponding administrative measures (European Commission, 2022; Miao et al., 2021).

The technology also has an uneven distribution and thus cannot be used to advance AI education governance. The stable digital infrastructure and an interoperable data platform of AI-assisted administration must be compatible with older administrative software and new intelligent systems. However, under-resourced institutions, especially those in remote areas or developing countries, often lack the funds, technical talent and data-governance capabilities required to build and run such a system (Miao et al., 2021; OECD, 2021). Therefore, AI may widen the digital divide rather than reduce it; well-funded institutions will be able to gain the benefits of efficiency and prediction offered by AI, and under-resourced schools will be further disadvantaged due to a lack of access to AI-assisted management tools (Apata et al., 2026; Ma'mun et al., 2025).

This is in line with other criticisms that AI should be used to support teaching and learning, not replace it (Selwyn, 2019). The problem of technology application is also closely related to people at the school level. The introduction of AI systems often faces cultural resistance from administrative staff and faculty due to long-standing worries about job loss and reduced human judgment, as well as a general lack of high-end digital literacy. Educational leadership will serve as the link for this change, but according to the literature, there is a significant lack of special training programmes designed to provide educational leaders with the necessary ability for effective governance of AI-integrated institutions. The absence of an all-encompassing AI governance system means that many educational institutions have failed to establish clear ethical norms, operating rules or accountability mechanisms in the process of digitalisation (Arar et al., 2025). Therefore, the successful application of artificial intelligence in school administration to some extent depends on whether the organisation is willing to change and how to build a people-oriented leadership model for new-technology development.

5. Conclusion

Based on the above analysis, the school will conduct all-campus introductions of AI-assisted educational management to improve administrative efficiency and detect problems among students earlier. In line with the PRISMA statement and using advanced thematic coding in ATLAS.ti, the main applications of AI in educational administration have been systematically identified in the preceding study. Predictive analysis, operational automation and resource allocation were identified as the first application areas of artificial intelligence in this study, and serious ethical, infrastructure and organisational problems associated with the new technology were also found at the same time.

Based on the above results, the realisation of the prospects for AI in educational administration will not be achieved solely by means of technological acquisition. It should be all-encompassing and system-level, introduce high-end technology, and have people-oriented leadership and strong ethical supervision. Build an open data governance system and an algorithm-audit mechanism in the school, and organise regular professional training for staff and administrators. The

above measures are to address the serious problems of algorithmic bias and privacy leakage, and to ensure that the application of AI technology is fair for all students.

In the future, research will gradually move away from the application of artificial intelligence and focus instead on the joint emergence of AI integration and organisational readiness, as well as which types of leadership models promote or hinder the diffusion of technology in different cultural and economic areas. A long-term study will also be conducted to examine the extended effects of AI-assisted administrative decisions on the quality of academic integrity and institutional stability. With the rapid development of artificial intelligence in recent years, all-round research is required to ensure that the new form of digital education administration is inclusive and equitable, and to promote improvements in the overall quality of education.

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