Region - Educational Research and Reviews, 2026, Volume 8, Issue 7
DOI: 10.32629/rerr.v8i7.5675
ISSN Online: 2661-4634
ISSN Print: 2661-4626

Artificial intelligence empowering the digital transformation of university educational administration

Yuqiu WANG

Yancheng Teachers University, Yancheng 224007, China

Abstract: AI development provides key support for the digital transformation of university education management, yet challenges persist in organizational structure, procedural mechanisms and talent development. This paper analyzes AI applications in management content, management approaches and talent cultivation, explores its value in process optimization, intelligent analysis and decision support, and identifies information silos, system fragmentation and weak collaboration as core bottlenecks. The study proposes three approaches: content restructuring via data governance, method upgrading through platformization and intelligence, and interdisciplinary capacity building, to improve management efficiency and quality. It also discusses the integration of multimodal, generative and edge-cloud technologies and their impact on the education ecosystem.

Keywords: artificial intelligence; university education; digital transformation; education management; innovation path

1 Introduction

This paper evaluates AI's adaptability in university education management from three dimensions: content, approaches and talent. In terms of content, it addresses indicator systems and data structures aligned with objective constraints. In terms of approaches, it explores the synergy of process reengineering, platform integration and algorithmic services. In terms of talent, it unpacks requirements for interdisciplinary teams regarding technical literacy, data governance and awareness of educational contexts. The practical goal is to translate investment into verifiable performance improvement, avoiding "system upgrade decoupled from process reform, leading to stagnant efficiency". The theoretical goal is to build an operable framework for "intelligence-management-education" integration, advancing prudent digital transformation and reusable paradigms for embedding model outputs into key decision links.

2 Current status of AI application and university education management

2.1 Digital development status

Universities have made obvious digital progress, but deep structural problems remain. Multiple parallel systems for teaching, research, HR, assets and student affairs have inconsistent standards; cross-departmental work relies on manual coordination, causing broken data chains and low efficiency; most systems only provide post-event statistics, lacking real-time monitoring and proactive prediction of learning behaviors and resource usage. Informatization does not equal intelligent management. The core lies in transforming fragmented information into computable, verifiable and reusable knowledge structures to support goal-oriented process control and decision-making [1].

Copyright © 2026 by author(s) and Frontier Scientific Research Publishing Inc.
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).
http://creativecommons.org/licenses/by/4.0/

2.2 Main problems and challenges

First, the management objects are ambiguously defined. Education management features multi-dimensional coupling, and single indicators cannot cover diverse objectives. Without targeted indicator stratification and data mapping, systems only replicate departmental ledgers, and intelligent analysis stays at statistical visualization without actionable suggestions. Second, traditional methods have strong path dependence. Workflows rely on manual approval and linear nodes; systems only realize online record-keeping rather than data-driven collaboration. Models can hardly enter core links, forming "effective offline but limited online". Third, workforce competence lags behind practical demands. Managers with inadequate data literacy cannot translate algorithm insights into measures; technical teams overlooking educational context produce unsuitable models. These problems reinforce each other, breaking management closed loops and hindering organizational learning.

2.3 AI application status

Current AI applications fall into two categories. One is low-complexity process automation and triage, such as routine administration, which boosts efficiency but brings limited quality gains. The other is big-data-based learning behavior analysis and teaching quality evaluation. The second generates insights but imposes higher requirements on data and mechanism, restricted by organizational boundaries and accountability arrangements. Insufficient collaboration and silos hinder cross-domain model deployment; poor interpretability raises decision costs, creating "great potential but difficult implementation". Without a unified framework and componentized services, even high-performance models can hardly deliver substantive process improvements [2].

3 Core dilemmas in digital transformation

3.1 Deficiencies in management content design

Most problems stem from the disconnection between goal decomposition and data mapping. University goals cover talent cultivation, academic output, social services and governance. Content designed solely by departmental functions solidifies into work lists, making it hard to turn cross-departmental goals into data-supported structured variables. Manifestations include: insufficient structuring of students' full-cycle data; inadequate collection of teaching process data; a lack of resource-performance correlation modeling, which prevents computable investment-outcome linkages from being established.

3.2 Outdated educational management approaches

Lagging approaches manifest in three aspects: systems launched before process reconstruction, partial automation disconnected from overall collaboration, data governance isolated from algorithm services. Traditional workflows rely on fixed approval nodes, ignoring real-time data and policy engines between links, breaking the iterative learning loop. Decision-making remains experience-driven; models serve as references rather than drivers, with inertia of "excluding algorithms from main workflows". Universities suffer from a lack of cross-platform data governance, inconsistent interfaces, and fragile end-to-end monitoring chains. This "incomplete processes-disconnected data-unimplemented models" chain limits long-term marginal benefits of approach upgrading.

3.3 Shortage of interdisciplinary management talents

The talent gap lies in mismatched competency structures and collaboration mechanisms. Managers need contextual judgment plus data literacy and model comprehension, to understand variable significance, identify data bias and choose feasible schemes under constraints. Technical teams need to recognize educational scenario constraints and value demands, avoiding direct adoption of general models. The two groups lack shared language and workflows, causing deviations in demand definition, data preparation and validation, forming "uncomputable problems-unexplainable features-unadoptable

results". Without composite capability training, universities can hardly build iterative organizational capacity.

4 Strategies for AI-empowered university education management

4.1 Clarify higher education management content

Content optimization follows the "Goal-Indicator-Data-Process-Feedback" logic. At the goal level, hierarchical decomposition and constraint setting enable flexible decoupling and coupling of cultivation quality, teaching, resources and student development at the indicator layer. For indicator-data mapping, cross-system standards and semantics should be standardized to support the collaborative governance of structured and unstructured data. Algorithm interfaces are reserved during process design, while model interpretability and re-evaluation upon intervention are established at the feedback layer to enable human-in-the-loop collaboration. Traceable evidence chains and multi-dimensional input-output matrices are constructed to render management computable, optimizable and robust [3].

4.2 Upgrade educational management methods

The priority is system redesign based on business reconstruction: end-to-end scenarios are streamlined, with model inference and policy enforcement embedded in key nodes to avoid simple online replication of offline workflows. The platform level advances cross-departmental master and metadata governance to unify coding schemes, event models and interfaces for stable data, event and decision flows. The algorithm layer develops reusable modular services for well-bounded high-frequency scenarios to achieve callable, verifiable and replaceable capabilities. Standardized workflows at the collaboration layer reduce communication costs. Robustness and fairness constraints are embedded for sensitive scenarios. Edge-cloud collaboration and lightweight deployment enhance real-time performance under resource.

4.3 Strengthen talent development for educational management

Talent system construction focuses on composite capabilities, covering training, deployment and evaluation. In training, modularize educational knowledge, data governance methods and basic AI skills to form gradient competency frameworks for different posts. In team operation, set up cross-functional project teams to solve real problems and shorten implementation cycles. In evaluation, balance process improvement and outcome performance, valuing both quantifiable efficiency gains and long-term value of data governance innovation. Improve data literacy for managers and educational context awareness for technical teams. Continuous capacity building will foster organizational capacity for human-machine collaboration and iteration in complex scenarios.

5 Conclusion

Focusing on AI-empowered university education management, this paper analyzes the issue from content, approaches and talent dimensions. It points out that the core constraint of digital transformation is structural mismatch in object definition, processes and capacity, rather than lack of tools. By goal-data-driven content reconstruction, platform-intelligence-oriented method upgrading, and composite-capability-centered talent system improvement, AI can evolve from an efficiency tool into part of governance capacity, boosting education quality and optimizing resource allocation. Future research should focus on algorithm interpretability, cross-domain data governance and human-machine collaboration mechanisms, promoting steady improvement through evidence accumulation and method iteration.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

References

[1] Zou J, Zhang Y, Liang C. Research on the impact mechanism of digital empowerment on talent cultivation quality in undergraduate universities[J]. Journal of Hubei University of Education, 2025.

[2] Chen M. Research on innovative paths of university educational administration in the era of artificial

intelligence[J]. Technology Wind, 2024.

[3] Slimi Z, Villarejo-Carballido B. Unveiling the potential: Experts' perspectives on artificial intelligence integration in higher education[J]. European Journal of Educational Research. 2024, 13(4): 1477-1492.