AI-Driven Education Quality Improvement in Private Universities

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Abstract

Against the dual tides of higher education massification and digitalization, private higher education institutions have emerged as a key driver of expansion in China's higher education system. However, they have long been under pressure in terms of quality assurance due to three core challenges: intense competition for student enrollment, resource constraints, and faculty turnover. The Outline for Building a Powerful Education Nation (2024–2035) and the National Education Digitalization Strategy explicitly identify educational digitalization as a critical breakthrough for developing a powerful education nation, while emphasizing the application of emerging technologies such as AI in education. This provides both a policy window and technical leverage for private higher education institutions to address their structural dilemmas. Focusing on the role of AI technology in enhancing teaching quality at private higher education institutions across scenarios including personalized teaching, intelligent assessment and virtual experiments, this paper proposes a "trinity" quality improvement pathway integrating "differentiated instruction, affective feedback, and precision evaluation." It further offers actionable strategies for private higher education institutions to achieve high-quality development through the application of AI.

Keywords

AI; Private Universities; Education Quality; Personalized Learning; OBE.

1. Introduction

Private higher-education institutions are colleges and universities established, in accordance with the law, by social organizations or individuals other than government agencies, using non-state financial resources to serve the public. They offer programs at the junior college, undergraduate, and postgraduate levels. Private higher-education institutions have expanded the scale of higher education, providing opportunities for more individuals who need or aspire to university study, made a significant contribution to the massification of higher education, and injected healthy competition and vitality into the higher education sector[1].According to the 2023 China Private University Ranking Index System, the core quality indicators include graduation rate, per-student educational resources, and employer satisfaction.

As of June 2024, data from the Ministry of Education of the People's Republic of China show 3,117 higher-education institutions nationwide, of which 803 are private—an increase of 14 over 2023 and accounting for 25.75% of the national total. Public institutions recorded a net increase of 31—2.2 times the private-sector gain—and accounted for 68.9% of all new institutions added in 2024. Of the 18 new undergraduate-level vocational colleges launched that year, 17 were public and only one private one. Private institutions enrolled 10.52 million undergraduate and junior-college students, equal to 27.04% of the national total. Although the absolute number of private institutions continues to rise, their share of the national total edged up only slightly, from 25.67% to 25.75%, indicating that public institutions are expanding faster in both institutional count and enrolment. Private higher-education institutions shoulder

nearly one-third of the country's higher-education provision, yet they still grapple with persistent challenges of competition for student enrolment, resource constraints, and faculty turnover.

The Outline for Building a Powerful Education Nation (2024–2035), the National Education Digitalization Strategy clearly identify educational digitalization as a key lever for achieving the goal of building a leading nation in education, emphasizing the integration of emerging technologies such as artificial intelligence into education and outlining a systematic roadmap for its development. Large-scale models, exemplified by DeepSeek, have achieved breakthroughs in text generation, logical reasoning, and multimodal human-computer interaction, with marginal costs nearing zero—offering a strategic opening for the high-quality advancement of private higher education institutions.

2. Theoretical Basis

OBE (Outcome-Based Education) is a paradigm that focuses on students' ultimate learning outcomes. It requires the entire education system to be organized around the competencies students will need in the future, with curriculums and teaching & learning serving as instruments to achieve these ends. Rooted in humanistic psychology's student-centered philosophy, OBE proceeds from the conviction that all individuals can learn. It is therefore designed around students and represents a commitment to the success of every learner.

The differences between OBE and traditional education are as follows: OBE centers on students' learning outcomes, while traditional education centers on curriculum structure. In the OBE model, time is a flexible resource that can be adjusted to meet the needs of both teachers and students; in traditional education, schedules and timetables are fixed. OBE employs clearly defined, uniform standards for all students; traditional education relies on competitive norms that allow only a minority to succeed. OBE aims to raise every student's learning outcomes or competence to the highest possible level by graduation; traditional education concentrates on exams and tests. The OBE philosophy stresses "reverse design and continuous improvement," demanding that the teaching system provide real-time diagnosis and dynamic adjustment—capabilities that align perfectly with the high-frequency feedback inherent in AI technology.

By deeply analyzing learning analytics and uncovering students' real needs, AI can define the intended learning outcomes of OBE, and then dynamically adjust curriculum content and teaching methods in line with real-time student data—thereby putting OBE's "reverse design" and "continuous improvement" into practice.

3. Problems Faced by Private Higher Education Institutions in Teaching Quality

In the digital-intelligence era, classroom teaching in private higher-education institutions has yet to break free from traditional models; teacher-centered content delivery still dominates. Acting as the central figure in the classroom, instructors rely on multimedia—images and videos—to deliver theoretical content, yet they seldom engage students in meaningful interaction or provide personalized guidance. Consequently, students are given little time or space for active thinking and merely absorb knowledge and information passively, resulting in low levels of classroom engagement. A university class should not be judged simply by how much knowledge the teacher imparts; rather, the criteria should be the extent to which it embodies the "student-centered" philosophy, how effectively it inspires students' thinking and stimulates their enthusiasm for learning, and how successfully it cultivates students' problem-solving skills and innovative mindset.

Currently, faculty members in higher-education institutions display weak awareness of data handling and limited digital-intelligence literacy—i.e., the combined mastery of digital tools and data-driven decision-making. An over-reliance on prescribed textbooks and syllabi has produced a monolithic teaching model that stifles teachers' initiative and creativity—the very "subjective initiative" prized in Chinese pedagogy.

The rapid advancement of digital-intelligence technologies has built a new ecosystem covering the entire instructional cycle (pre-class, in-class, and post-class). This ecosystem has fundamentally changed how university courses are planned, organized, and delivered compared with conventional practices. Yet, confronted with ever-changing digital-intelligence tools, teachers' long-standing experience in instructional design, lesson planning, classroom management, method selection, and assessment is no longer adequate and urgently needs updating and transformation.

A further barrier is the sheer variety of online-teaching platforms. Commercial developers, aiming to lock in users, enhance brand loyalty, and raise entry barriers for competitors, rarely adopt unified technical standards, interfaces, or workflows. The resulting fragmentation significantly raises both the time and the financial costs of mastering new platforms, so most faculty still rely on textbooks and interactive whiteboards as their primary instructional media.

Faculty also tend to stick with familiar platforms that merely support one-way content display, and they are slow to embrace newer tools that leverage digital-intelligence features to enable real-time online interaction; few proactively migrate to more advanced systems.

Finally, assessment remains overwhelmingly exam-driven, with questions confined to the boundaries of the textbook. This approach prioritizes rote memorization over understanding and theory over practice. Students—who enter university with diverse starting points—face a one-size-fits-all curriculum that breeds frustration and fails to spark genuine interest in learning.

4. Implementation Paths for AI-Enabled Teaching-Quality Enhancement in Private Higher-Education Institutions

The rapid evolution of AI is powering teaching-quality enhancement in private higher-education institutions, fueling innovations in digital-intelligence pedagogical practice[2],fostering smart-classroom environments, and enabling personalized learning. By emphasizing outcome-driven, practice-oriented education, these advances facilitate the exploration of actionable pathways to elevate digital-intelligent teaching quality—thereby driving system-wide teaching reform in private higher-education institutions.

"AI + Education" transcends traditional temporal and spatial boundaries, forging self-directed learning scenarios that grant students flexible schedules, autonomous content sequencing, and pace control tailored to their individual traits and aptitudes. University students have an inherent affinity for and high adaptability to digital-intelligence teaching, and they harbor strong expectations for high-quality digital-intelligence instruction. Digital-intelligence-empowered university teaching provides personalized learning experiences: it not only meets students' needs for knowledge acquisition, emotional experience enrichment, and personal growth and development, but also expands their thinking abilities, strengthens their innovation awareness, and creates more possibilities for their continuous innovation in practice[3]. Faculty in private higher-education institutions can harness AI to orchestrate richer, highly personalized learning experiences.

Digital resources are pivotal to this shift. Instructors can embed courseware, video snippets, and learner-analytics dashboards to deliver flipped, precision, or micro-teaching sessions while enriching conventional lectures. Students, meanwhile, access multimodal materials—text, video, audio, and interactive slides—selecting formats that match their preferred learning

styles. To raise teaching quality, an open-participation ecosystem should incentivize continuous co-creation and sharing of digital resources across campuses.

The development of AI opens new avenues for personalized learning in private higher education. By precisely analyzing learners' behaviors, interests, and mastery levels, AI systems intelligently recommend course resources and pathways tailored to each student, delivering a bespoke learning experience. AI also tracks every student's progress, offering targeted interventions and guidance to close knowledge gaps promptly and optimize learning strategies—thereby markedly improving efficiency. For students with diverse proficiency levels, AI enables adaptive, tiered instruction based on their individual abilities. Personalized learning unleashes and nurtures each learner's unique potential, exemplifying how AI advances educational equity through differentiated, aptitude-based instruction.

AI can revitalize traditional classroom teaching in private higher education. By leveraging speech recognition and natural-language processing, instructors can seamlessly collaborate with AI teaching assistants to receive end-to-end instructional support. During lesson preparation, AI systems recommend high-quality teaching resources tailored to the teaching theme, key knowledge points, and other criteria, lightening the workload of instructors. In class, AI monitors students' facial expressions, vocal tones, and other cues in real time, analyzes their attention levels and comprehension status, and provides instructors with targeted interactive feedback to optimize teaching strategies. After class, AI-powered assignment-marking systems swiftly grade assignments, generate detailed learning-analytics reports, and help instructors identify students' weak areas.

For students in private higher education, VR/AR technologies create immersive scenarios that transform dry concepts into vivid, three-dimensional experiences, sparking intrinsic motivation. AI enables targeted pre-class content delivery, interactive in-class discussions, and post-class follow-up, seamlessly integrating online and offline learning. Teachers shift from "knowledge transmitters" to "learning facilitators," while students evolve from "passive recipients" to "active inquirers." Private institutions should therefore design differentiated, evidence-based blended programs to boost engagement and measurable learning gains.

AI can gather multi-dimensional classroom data and subject it to intelligent analysis, generating objective, comprehensive insights for teaching-quality assessment. It scrutinizes instructors' board work, speech rate, and emotional cues to supply quantitative evidence for instructional diagnosis and faculty development, while tracking students' engagement and homework completion to build formative-assessment portfolios. Together, these measures safeguard and elevate teaching quality in private higher-education institutions.

5. Conclusion

Artificial intelligence is profoundly transforming every dimension of private higher education, from teaching to administration. AI has become an indispensable part of the instructional process in private higher-education institutions, and its continued evolution unlocks boundless opportunities for elevating and reimagining teaching quality. Embracing this era with openness and innovation, these institutions can fuse digital resources with teaching content, enhance learning outcomes, and spawn new strategies for educational reform. This study has successfully constructed an AI-OBE "trinity" model applicable to the teaching scenarios of private higher-education institutions. Nevertheless, its generalizability is constrained by the single-country research context; future studies may thus extend this framework to public universities or cross-cultural settings to further verify the model's adaptability across diverse educational contexts.

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