

AI-Enabled Innovation in University Teaching Secretary Management Services: Practical Pathways and Theoretical Reflections

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Abstract: Artificial intelligence is reshaping the operation of university teaching administration. As frontline grassroots teaching managers, teaching secretaries face dual dilemmas: mounting administrative workloads and the absence of closed-loop quality feedback in all teaching management processes. Based on frontline practical experience, this paper sorts out efficiency bottlenecks under traditional management modes and explores feasible paths for AI to empower teaching secretaries' work by referencing existing university intelligent academic administration practices. The core value of AI lies not in replacing staff positions, but in redefining human-machine work boundaries: it frees teaching secretaries from repetitive mechanical work and allows them to focus on data interpretation, professional judgment, teacher-student communication and other creative educational work. This paper further sorts out realistic barriers restricting AI implementation, and clarifies that technological empowerment relies on coordinated progress in data governance, institutional support and staff role cognition. It proposes that teaching secretaries should shift from passive recipients of technology to active participants in process optimization and intelligent tool iteration, so as to reconstruct their professional value amid educational digital transformation.

Keywords: Artificial intelligence; Teaching secretary; University teaching administration; Human-machine collaboration; Digital transformation

Online publication: May 26, 2026

1. Introduction

The teaching secretary occupies an indispensable supporting position in university teaching operations, covering class scheduling, exam arrangement, student status management, teaching supervision, and evaluation data sorting. However, relevant academic research on this post is insufficient, and most existing discussions only stay at experiential summary without systematic theoretical analysis.

The neglect of academic research contradicts the heavy workload of teaching secretaries. Taking

terminal exam scheduling as an example, secretaries need nearly a week to coordinate classrooms, teacher time and student distribution while satisfying various restrictive conditions, yet unreasonable schedules such as one class sitting four exams in one day still frequently appear and trigger complaints from teachers and students. Academic early warning, teaching supervision data filing and evaluation statistics are also repetitive semesterly tasks: secretaries spend massive time exporting, classifying and sorting data, but the collected information is rarely used for follow-up teaching optimization ^[1].

The core defect of traditional teaching secretary work is high repetition, rule-based operation, and lack of effective feedback loops. Most energy is consumed on information collection, sorting and transmission, leaving insufficient time for educational judgment and humanized communication—the core educational value of this position. This widespread problem is not merely individual job burnout, but a long-standing structural defect in university grassroots teaching management ^[2].

The rise of large language models and dedicated educational AI systems has brought technical solutions to ease this predicament. Many domestic universities have launched self-developed intelligent academic administration agents, such as Hefei University of Technology’s “Hu Xiaobing” and Shandong Jianzhu University’s “AI Academic Steward”, turning AI teaching management from theoretical discussion into on-campus practical application. Against this backdrop, this paper analyzes the efficiency pain points of traditional teaching management, sorts out AI intervention paths for core teaching secretary work, and puts forward targeted coping strategies for the practical obstacles of AI promotion.

2. Basic logic and classification of AI intervention in teaching administration

To clarify the scope of AI empowerment, teaching secretary work can be divided into three tiers according to cognitive task difficulty. First, information collection and sorting, including score export, evaluation data compilation, and supervision record archiving: these standardized, repetitive tasks are most suitable for AI automatic processing. Second, preliminary data analysis and judgment such as screening academically risky students and identifying abnormal evaluation indicators: current AI with pattern recognition ability can complete most of this work as auxiliary support. Third, educational decision-making and communication, including determining tutoring plans for underachieving students and communicating optimization suggestions to low-scoring teachers: such work requires human empathy and educational experience, which cannot be fully replaced by algorithms ^[3].

It can be concluded that AI mainly undertakes tier-one work and partially assists tier-two analysis, releasing secretaries’ energy to focus on irreplaceable tier-three educational work. Existing AI tools for university teaching management fall into four functional categories for practical use.

Large language models and intelligent dialogue assistants (DeepSeek, Wenxin Yiyan, etc.): they excel at natural language generation to draft examination notices, sort meeting minutes, and polish administrative documents, only requiring secretaries to check and revise core information.

Dedicated academic administration AI systems: customized campus platforms for scheduling, academic early warning and teaching analysis, represented by “Hu Xiaobing” and “AI Academic Steward”, which integrate inquiry, statistical analysis and personalized suggestion functions.

Data analysis and visualization tools: rapidly process massive scores and evaluation data to automatically generate trend charts and analysis reports, compressing multi-day manual sorting work into minutes of preliminary processing.

Robotic Process Automation (RPA): simulates manual repeated operations in academic systems to finish batch data entry, information synchronization and mass notice distribution.

In actual campus scenarios, these four types of tools are often used in combination to cover all links of teaching secretaries' daily work.

3. Specific paths of AI empowering core teaching secretary work

3.1. Exam scheduling: Manual coordination to algorithm-assisted optimization

Exam scheduling is the most constrained work for teaching secretaries, requiring coordination of dozens of courses, teacher invigilation time, and classroom resources. Traditional manual scheduling relies on personal experience and repeated adjustment, which is time-consuming and prone to unreasonable time allocation. AI transforms scheduling into a multi-objective optimization calculation, supporting natural language input of customized preferences such as avoiding consecutive invigilation for teachers or arranging core courses in prime time, and quickly outputting multiple conflict-free schemes^[4].

The author's college practice shows that AI-assisted scheduling cuts adjustment rounds from 5–6 times to 1–2 times, and shortens the whole cycle from one week to two days. Nevertheless, algorithm results cannot be directly adopted without review. Algorithms fail to capture personalized practical factors including teachers' commuting difficulties and cross-campus student travel needs, so final manual review and fine-tuning by teaching secretaries remain mandatory.

3.2. Student status management: Passive early warning to whole-process active intervention

Traditional academic early warning only completes student screening and notification, lacking follow-up targeted intervention mechanisms. Counselors merely receive name lists without differentiated cause analysis and matching support plans, making the early warning system lose its corrective function.

AI early warning systems build a complete “warning-diagnosis-support suggestion” closed loop by integrating grades, course selection and attendance data. The system automatically distinguishes different types of academic risks: single-course difficulty bottlenecks, overall multi-subject performance decline and low-attitude absenteeism problems, and generates classified intervention plans. Shandong Jianzhu University's application data proves that after deploying the intelligent early warning system, counselor intervention coverage reaches 100%, and the proportion of seniors failing to graduate on time drops by 53% compared with 2019. AI diagnosis results only serve as reference materials; decisions on student interviews, tutoring arrangements and parent communication still rely on secretaries and counselors' comprehensive educational judgment^[5].

3.3. Teaching supervision and evaluation: Dormant archival data to intelligent value mining

Massive class observation records, student evaluation scores and test paper analysis reports are archived after collection but rarely reused, forming the dilemma of high data collection cost and low utilization efficiency. AI solves this problem through three layers of capability. First, automatic data collection: smart classrooms deploy audio and video acquisition equipment, and AI speech and image recognition automatically record classroom attendance, interaction frequency and student engagement to supplement traditional artificial

evaluation. Second, intelligent text analysis: natural language processing sorts supervision comments and student feedback, extracting high-frequency problems and emotional tendencies. The author completed classification and frequency statistics of one semester's supervision forms within 30 minutes via AI tools, while manual work would take several days. Third, personalized teacher feedback reports: multi-dimensional data integration generates exclusive evaluation files for each teacher, clearly distinguishing teaching strengths and areas for improvement instead of simple overall rankings, represented by Hunan University of Technology's intelligent teacher profile system. AI analysis results still need manual verification. The algorithm efficiently identifies standardized teaching indicators but easily misjudges context-dependent descriptive comments, so deep content screening and targeted analysis must be completed by teaching secretaries.

3.4. Faculty development: General training to precise ability empowerment

Current teacher training has a prominent supply-demand mismatch: training themes are determined by administrative arrangements rather than teachers' real teaching difficulties. The author's statistics show less than 30% of training content matches the competency gaps reflected in supervision and evaluation feedback.

AI breaks this deadlock by building multi-dimensional teacher ability portraits based on supervision records, teaching effect data, and self-evaluation information, intuitively displaying deficiencies in teaching design, classroom interaction, and curriculum ideological-political integration. By summarizing common weak points of all teachers, AI provides objective data support for training theme formulation. For example, if data shows nearly 40% of young teachers struggle with the organic integration of ideological-political elements, schools can organize targeted practical workshops instead of universal general lectures. After training, AI tracks changes in subsequent teaching evaluation data to objectively measure training effectiveness. It is worth emphasizing that algorithms cannot fully quantify educational effects; AI only provides systematic data reference, and training planning still depends on secretaries' comprehensive judgment ^[6].

4. Practical barriers and limitations of AI application in teaching management

Although AI brings obvious optimization space to teaching secretary work, its campus promotion faces four major restrictive factors.

4.1. Uneven technical operation ability

Using intelligent tools requires basic digital literacy. A university piloting intelligent scheduling reported that one-third of teaching secretaries returned to manual arrangement half a year after launch due to unskilled operation. The root cause lies in insufficient systematic training and transition arrangements: only distributing operation manuals and holding one-time brief training cannot change long-standing work habits, leading to low tool acceptance.

4.2. Incomplete and inconsistent basic data

AI operation effect is highly dependent on data quality and system interconnection. Most universities separate academic affairs, evaluation and student management systems under different departments with inconsistent data standards and interface specifications, resulting in fragmented, disunified data sources. A person in

charge of campus early warning system construction pointed out that data cleaning and standardization took more than half a year, which constituted the biggest technical bottleneck rather than algorithm development. AI empowerment is based on unified data governance and cross-departmental system integration, testing schools' overall organizational coordination capacity ^[7].

4.3. Organizational inertia and post-identity anxiety

Teaching secretaries hold complicated attitudes toward AI: they expect workload reduction while worrying about job displacement. Such anxiety stems from a misunderstanding of AI's positioning: intelligent tools replace repetitive tasks rather than entire positions. Schools need to provide systematic guidance to help secretaries establish a rational understanding of human-machine collaboration, guiding them to re-examine their irreplaceable educational value beyond mechanical work.

4.4. Inherent boundaries of AI capability

Algorithms can quantify and analyze objective data but cannot perceive the deep-seated subjective factors behind educational phenomena. AI can screen students with declining grades, yet it cannot judge whether the root cause is family pressure or psychological problems; it can summarize teacher teaching indicators, but it cannot capture teachers' internal educational enthusiasm and emotional dedication. The core positioning of AI is to undertake routinized work, so that human staff can devote energy to communication, empathy and educational decision-making that algorithms cannot complete.

In general, AI is neither a universal solution nor a threat to teaching secretary posts. Its actual application effect is jointly determined by technical maturity, data infrastructure, staff digital ability and institutional support. Blindly promoting or resisting AI without considering campus actual conditions will fail to achieve expected management optimization.

5. Conclusion

This paper answers three core questions raised in the introduction. First, AI can partially liberate teaching secretaries from repetitive work such as scheduling, early warning and data sorting, transferring their energy to high-value educational work requiring professional judgment and communication. Second, specific application paths cover four core business modules: algorithm-assisted conflict elimination in exam scheduling, whole-chain risk diagnosis in student status management, automatic collection and intelligent mining of supervision evaluation data, and demand identification and effect tracking for targeted teacher training. Third, the popularization of AI is restricted by an imperfect data foundation, uneven staff technical ability, and insufficient organizational support, and it can never replace human unique educational judgment and emotional communication.

The unified core conclusion of the above analysis is: AI empowers teaching secretaries through liberation rather than replacement. However, such liberation cannot be realized automatically. The same intelligent tool produces completely different effects in different colleges, with the core difference lying in staff operation ability, institutional guarantee and clear human-machine division of labor cognition. Teaching secretaries must reconstruct their professional value in the process of collaborative work with AI: they need to fully recognize AI's functional limits while highlighting their own irreplaceable educational value.

A senior teaching secretary shared valuable experience: after outsourcing data statistics to AI, she

discovered hidden curriculum design problems behind student performance rules that were previously ignored. This kind of deep logical analysis connecting data and teaching practice is the unique professional value of teaching secretaries, which cannot be realized by algorithms alone.

Technology keeps iterating, yet the core mission of education remains supporting teacher development and student growth—targets that rely on human warmth and educational judgment. AI can process massive data efficiently, but it cannot interpret the essential connotation of education. The positioning of teaching secretaries in the intelligent education era is not to compete with AI in data computing, but to build a communication bridge between algorithm data and educational practice, making intelligent technology serve educational goals. Under this redefined positioning, teaching secretaries will become irreplaceable collaborative partners of educational digitalization instead of displaced workers in the AI era.

Disclosure statement

The authors declare no conflict of interest.

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