

Article

Research on the Cultivation of University Teachers' Leadership in Jiangsu from the Perspective of AI Literacy

Yanning Xue^{1,*}

¹ Inti International University, Nilai, Malaysia

* Correspondence: Yanning Xue, Inti International University, Nilai, Malaysia

Abstract: AI literacy is now required for the leadership development of university teachers in the digital-Intelligent Era. Based on universities in Jiangsu Province, this study clarifies the connotations of AI literacy and teacher leadership, and explores the driving forces behind teachers' AI literacy for professional leadership, instructional leadership and organisational leadership. According to the survey, university teachers in Jiangsu have a relatively high level of AI awareness but lack practical application. The leadership structure shows an uneven distribution of "strong professionalism, moderate guidance and weak organisation". The reasons are a fractured training system, a lack of functions for cooperative platforms, and misaligned institutional incentives. Therefore, this paper puts forward a three-in-one cultivation path of hierarchical and categorised training systems, AI-enabled collaborative sharing platforms, and strengthened institutional guarantees. Provide support for the organisation's assurance, process supervision and all-around assessment. This paper hopes to offer some theoretical support and practical suggestions for promoting the digital-intelligent transformation of university teacher leadership in Jiangsu and elsewhere across China.

Keywords: AI literacy; university teacher leadership; teacher development; universities in Jiangsu Province; cultivation pathways

1. Introduction

As artificial intelligence has been integrated into all parts of higher education, teachers have changed from being "knowledge transmitters" to "learning facilitators", "academic innovators", and "organizational change agents", and at the same time, the concept of leadership has also been restructured. As one of the leading provinces for higher education, Jiangsu has a large number of university teachers, but no systematic studies have been conducted on their AI literacy and leadership development. Most of the existing studies focus on a single dimension and do not provide a mechanism for the internal correlation among these factors or a region-specific cultivation system. From the perspective of AI literacy, this paper will systematically explore the current situation of university teacher leadership in Jiangsu Province, investigate the internal logic by which AI literacy enhances leadership, and propose feasible cultivation paths and guarantee mechanisms to meet the urgent demand for professional development of university teachers in the digital-intelligent era [1].

2. Core Concepts and Theoretical Foundations

2.1. Connotation and Components of AI Literacy

AI literacy refers to one's all-around ability to understand, use and evaluate artificial intelligence technology; to work with AI systems; and to think critically about the ethics of such applications in daily life. It is not only the accumulation of technical skills but also an integrated system of the four components: cognition, application, ethics and innovation. Cognitive attributes refer to the basic ideas of AI, its limitations and data logic. The Application Dimension is concerned with the actual convenience of tool operation and

Received: 31 July 2026

Revised: 14 September 2026

Accepted: 24 September 2026

Published: 30 September 2026



Copyright: © 2026 by the authors. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

problem-solving. Ethical Issues include problems of privacy infringement, algorithmic bias and lack of responsibility. Innovation refers to new forms of organisation for work and creation of new knowledge through AI. The four interconnected factors provide the basis for analysing teachers' AI literacy [2].

2.2. Connotation and Dimensions of University Teacher Leadership

University teacher leadership is not a form of administrative authority. It is a system of abilities that help teachers achieve educational goals through professional influence, instructional inspiration and organisational coordination among academic communities. Teacher leadership is not the same as the leadership of university presidents or administrative staff; rather, it has features such as distribution, contextuality and professionalism. The three types of leadership in this paper are: professional leadership, which refers to the ability to drive innovation in disciplinary knowledge and lead academic teams; instructional leadership, which includes the capacity for curriculum design, learning support and teaching reform; and organisational leadership, which refers to the capability to participate in faculty-department governance, engage in cross-departmental cooperation, and build an educational ecosystem. The three levels are in ascending order: micro-level classrooms, meso-level faculties and departments, and finally macro-level universities.

2.3. Theoretical Basis and Analysis System

Based on the Technology Integration Model, Distributed Leadership Theory and Andragogical Learning Theory, this paper builds a three-tier analytical system of "literacy-competence-ecology". The Technology Integration Model shows how AI can be used to enhance the cognitive support for teaching and research. Distributed Leadership Theory believes that leadership in an organisation is flexible and shared. Andragogy provides a theoretical basis for the self-directed learning of teachers as lifelong learners. At the bottom of this three-tier structure is AI literacy; at the middle is teacher leadership, and at the top is the university's organisational ecosystem providing support. This system will help us understand how AI literacy affects teacher leadership and set limits for cultivating such leaders.

3. Current Situation and Problems of University Teacher Leadership in Jiangsu Province

3.1. Survey on the Current Situation of University Teacher Leadership in Jiangsu Province

Distribute questionnaires to 436 full-time teachers at all 12 kinds of universities in Jiangsu Province and conduct some in-depth interviews. Based on the above results, teachers have reported relatively high self-assessment scores for their professional leadership abilities, particularly in leading research projects and supervising graduation theses. Instructional leadership has shown different characteristics: young teachers are better at promoting blended learning, and older teachers have extensive experience designing curriculum systems. The level of organisation's leadership is relatively low, and most teachers feel they have little say in faculty-department decisions. The Various Universities Have Different Levels. Teachers from "Double First-Class" universities use AI tools more often than those from application-oriented undergraduate institutions, but there is no clear positive correlation across all leadership dimensions. Therefore, having technology is not the same as being able to use it [3].

3.2. Correlation Analysis of Teachers' AI Literacy and Leadership

Based on correlation analysis and regression models, both the ethical and innovative aspects of AI literacy are positively correlated with professional leadership. The application dimension has the strongest correlation with instructional leadership, and the cognitive dimension surprisingly shows a good fit for organisational leadership; deep understanding of AI logic can help teachers propose forward-looking technical suggestions for cross-departmental communication. Mediation analysis also finds three paths by which AI literacy promotes leadership: increasing teachers' sense of data-driven

decision-making, enhancing the efficiency of instructional reflection, and extending academic collaboration networks. Interaction terms show that the positive effect of AI literacy on leadership is relatively weaker in the absence of organisational support. Therefore, some teachers who are highly literate in AI do not exhibit corresponding leadership qualities.

3.3. Main Problems and Their Reasons

The Development of university teacher leadership in Jiangsu has three problems. Firstly, there is a mismatch between the training system and literacy requirements; at present, the focus of training is on tool operation, and ethical reflection and innovative application have been overlooked, leading to a situation where one can "operate but cannot apply proficiently" and "understand technology but fails to grasp education". Secondly, there is a mismatch between collaborative platforms and leadership cultivation; most universities do not have AI-enabled interdisciplinary and inter-university cooperative mechanisms for teachers, and thus provide no practical field for leadership cultivation. Third, there is a conflict between institutional incentives and literacy development: performance appraisal and professional title evaluation do not include AI-integrated teaching or data-driven decision-making as key indicators, thus reducing teachers' intrinsic motivation for deep study in AI. In short, university administrators are unaware of the strategic advantages of AI literacy and consider it merely IT training rather than a general-purpose ability-building plan.

4. Internal Logic of Teacher Leadership Cultivation from the Perspective of AI Literacy

4.1. AI Literacy Drives the Improvement of Teachers' Professional Leadership

AI literacy provides support for professional leadership through two paths: improved academic efficiency and restructured knowledge networks. AI-assisted literature mining, data analysis and research design can reduce the time needed for research preparation; thus, teachers will have more time to focus on finding new research directions and building teams strategically—both of which are essential for professional leadership. Knowledge networks are used to build AI-driven academic recommendation systems that connect teachers across disciplines, find potential collaborators and interdisciplinary research topics quickly. Thus, they can fill the structural hole in the academic community and enhance academic impact. The above driving forces require good algorithmic literacy among teachers to assess the quality of the results; otherwise, there will be no way out of the information cocoon [4].

4.2. AI Literacy Promotes the Development of Teachers' Instructional Leadership

Instructional leadership is moving away from "classroom control" towards "learning ecosystem construction", and AI literacy is now serving as the catalyst for this change. Teachers with AI literacy can use learning-analytics tools to identify students' cognitive obstacles precisely and change their decisions about instruction from experience-based intuition to data-driven evidence; thus, they will gain professional authority in the instructional team. AI-literate teachers can design new forms of human-AI collaborative teaching that do not replace teachers with AI but rather redefine the special role of teachers as learning facilitators. Therefore, the concept of instructional leadership has moved from mere technical application to educational leadership.

4.3. Expansion of AI Literacy for Teachers' Organisational Leadership

University teachers have been excluded from the management and decision-making process for a long time. The spread of AI literacy will help address the above problems. Teachers who are familiar with the logic of AI can support the governance agenda by providing quantitative data for resource allocation, main setting and quality assessment, etc., thus transforming their participation from a form of symbolic representation into an effective contribution. At the same time, AI-powered cooperative platforms reduce cross-departmental communication costs and allow teachers to build horizontal leadership at a

larger scale for bottom-up organisational innovation. Indeed, this expansion requires suitable organisational empowerment; otherwise, even high-level AI literacy will achieve little beyond the existing system.

5. Cultivation Paths for University Teacher Leadership in Jiangsu Province

5.1. Build a Hierarchical and Categorised System for AI Literacy Training

The three modules are progressively designed to meet the various demands of novice teachers, backbone teachers and leading teachers: basic applications, instructional integration and innovation leadership. Novice teachers focus on operating AI tools and being aware of data security; backbone teachers focus on AI-driven curriculum restructuring and learning analytics; leading teachers enhance their capacity for AI ethical governance and strategic planning. Categorisation differs by discipline: Science and Engineering focus on data-modeling orientation, and Humanities and Social Sciences emphasise text-analysis orientation. Institutions are also different: Research-oriented universities aim to promote research, and application-oriented undergraduate institutions focus on teaching reform. The training system will be added to the teachers' credit bank for professional development and linked softly with the promotion of professional titles to strengthen institutional ties.

5.2. Build AI-Based Collaborative and Sharing Platforms for Teachers

Platforms should develop into actual communities for teacher leadership rather than just collections of resources. The main functions are as follows: AI-matched inter-university teaching-research groups automatically recommend teachers with overlapping research interests to form collaborative lesson-preparation or joint research teams; digital portraits of teacher leadership that generate multi-dimensional competence maps based on teaching data, research outputs and organisational participation to help teachers identify development gaps; intelligent case repositories that collect outstanding local practices of AI-integrated teaching and governance in Jiangsu for retrieval and situational learning. A professional moderator will be appointed to manage the platform and ensure that the technical tools are used properly by all parties [5].

5.3. Strengthen Institutional Safeguards for Teacher Leadership Development

Design institutions to address the incentive gap in the current evaluation system. At the university level, AI literacy will be added to the "professional development" section of teachers' annual performance evaluations, and specific requirements for minimum training hours and outcome transformation will be established. At the faculty-department level, teachers' committees should be given actual decision-making power over curriculum reform and academic resource allocation to create real opportunities for leadership practice. Provincial education departments can add indicators of teachers' AI literacy and leadership development to the classified evaluation system for universities to provide top-down motivation. A special fund for teacher leadership will be established to support teacher-led projects in AI-empowered instructional innovation and governance improvement, and grassroots reforms will be promoted through project-based mechanisms.

6. Safeguard Mechanisms and Evaluation System

6.1. Organizational Assurance and Resource Input

Universities should establish a development centre for teachers' AI literacy and leadership under the leadership of university-level officials in charge, integrate the functions of information-technology offices, academic-affairs offices, human-resources departments and faculty-development centres to avoid inefficiency due to fragmented administration. Financial investment will be used to upgrade hardware, purchase software and hire external experts. More significantly, the time resources available for teachers' off-the-job learning need to be secured through exploration of integrated systems of "academic sabbatical + AI-oriented advanced studies". Libraries and Information

Centres should be transformed into service hubs for AI literacy, providing professional support such as data consultation, algorithm auditing and ethical review, and building a stable organisational support network.

6.2. Process Monitoring and Feedback Mechanisms

A closed-loop monitoring process will be used: a baseline test at the start of each semester, process observation during the middle of the semester, and a result analysis at the end of the semester. Standardised Scales are used in the initial assessment to determine the starting points for teachers' AI literacy and leadership across all areas. Process tracking uses behaviour logs and teaching reflection texts from collaborative platforms, and then text-mining technology is employed to automatically generate developmental heat maps. Triangulation of outcomes includes teacher self-assessment, student evaluations and peer assessments. Monitor the results and inform the faculty, department and individual every three months. Anonymously submit an appeal through a special channel to prevent discrimination based on technical data collection.

6.3. Multiple Indicators for Evaluation and Ongoing Optimisation

In addition to a single index, the three-dimensional indicators of "evidence-based outcomes, developmental narratives and ecological contributions" have been introduced in the evaluation system. Evidence-based outcomes include AI-integrated instructional design schemes, data-driven instructional-reform reports and academic innovations. Developmental narratives require teachers to submit reflective journals on leadership development documenting critical events of cognitive transformation. Ecological contributions measure teachers' participation and influence in platform cooperation, inter-university sharing and mentorship for junior faculty. Based on the above assessment results, modify the training plan dynamically and add excellent cases to the provincial teacher-training resource library. Every two years, institutional efficiency will be evaluated, and according to changes in the external technological environment and teachers' needs, this evaluation criteria will also be continuously revised to form a spiral-improvement cycle.

7. Conclusion

AI literacy and university teacher leadership are not merely added together; rather, they achieve deep coupling through cognitive reconstruction, practical transformation and ecological coordination. As one of the first areas in China to implement higher education reforms, Jiangsu has begun addressing the problem of "technical ability and leadership capacity" among new-generation college students. The integrated scheme of "literacy-driven - logical interpretation - pathway construction - mechanism guarantee" proposed in this study addresses the new role of teachers in the digital-intelligent era and considers realistic constraints on regional higher education. In the future, more empirical evidence will be collected on the cultivation path and different application scenarios for all types of universities can be explored to provide richer theoretical support for the modernisation of Chinese higher education.

References

1. C. K. Y. Chan, "A comprehensive AI policy education framework for university teaching and learning," *International Journal of Educational Technology in Higher Education*, vol. 20, no. 1, p. 38, 2023.
2. I. Tenberga and L. Daniela, "Artificial intelligence literacy competencies for teachers through self-assessment tools," *Sustainability*, vol. 16, no. 23, p. 10386, 2024.
3. Ö. Çoban and M. Durnalı, "Teacher leadership and AI literacy: An analysis of teachers' AI literacy levels," in **Holistic Approaches to Teacher Development: Leadership, Pedagogical Practices, and Cognitive Insights**. Hershey, PA: IGI Global Scientific Publishing, 2025, pp. 1–24.
4. R. Daher, "Integrating AI literacy into teacher education: a critical perspective paper," *Discover Artificial Intelligence*, vol. 5, no. 1, p. 217, 2025.
5. N. Ghamrawi, T. Shal, and N. A. Ghamrawi, "Teacher leadership in AI-integrated K-12 classrooms: agency, identity, and authority," *School Leadership & Management*, vol. 46, no. 3, pp. 322–349, 2026.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of Publisher and/or the editor(s). Publisher and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.