Technology and Artificial Intelligence Literacy in the Digital Age: Insights from a Teacher Mobility Program

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ABSTRACT

As digital transformation accelerates, teacher mobility programs must cultivate educators' cross-cultural competencies alongside technological and AI literacy. Yet significant gaps persist: many academics possess only a moderate familiarity with emerging technologies, raising concerns about their capacity to engage meaningfully with digitally mediated pedagogical and research practices. These limitations are exacerbated by ethical considerations, data privacy concerns, and risks of cognitive offloading inherent in AI integration. Addressing these deficiencies is essential to maintaining the relevance and efficacy of teacher mobility programs within global academic contexts. This study examines technology and AI literacy among academics in a teacher mobility program and identifies key themes shaping their perceptions of AI in education and research. Employing a mixed-methods design, the study combined quantitative demographic surveys with qualitative reflections from fourteen participants, balanced by gender and representing diverse age groups and disciplines. The data encompassed professional backgrounds, technological competence, familiarity with AI tools, and a thematic analysis of participant reflections. The findings indicate predominantly average self-assessed levels of technology and AI literacy. However, qualitative data reveals growing recognition of AI's transformative potential, with perceptions evolving from AI as a tool to AI as a collaborative partner in pedagogy, research, and scholarly writing. While opportunities for enhanced academic practice emerge, challenges concerning ethical deployment and overdependence remain salient. These findings underscore the need to integrate structured digital literacy training into teacher mobility programs to prepare educators for the contemporary digital demands.

INTRODUCTION

Teacher mobility programs have emerged as pivotal mechanisms within the academic community to foster cross-cultural collaboration, professional development, and international partnerships. These initiatives provide educators opportunities to exchange knowledge, adopt innovative pedagogical approaches, and facilitate the global circulation of ideas. In recent years, advances in educational technology have expanded the scope of teacher mobility programs, enabling participants to engage not only in face-to-face settings but also through virtual and blended learning environments (Knight, 2015; de Wit, 2020). Given the escalating importance of digital skills, it is essential to investigate how academic participants adapt to technological demands during their involvement in transnational mobility programs.

Despite the increasing integration of technology in higher education, there remains a paucity of research on how teacher mobility participants, particularly those from China, navigate this evolving digital landscape. Although China has made significant investments in educational technologies and artificial intelligence (AI) (Zhao & Huang, 2020; Huang et al., 2022), little is known about the extent to which Chinese scholars incorporate these technologies and AI-related research into their academic, pedagogical, and communicative practices within mobility contexts. Addressing this knowledge gap is critical, as digital literacy is becoming a determining factor in the effectiveness of academic exchange and collaboration in the twenty-first century.

The current study aims to explore the technological and AI literacy of Chinese academics participating in an international teacher mobility program. Specifically, it aims to investigate the relationships between participants' professional and demographic characteristics and their levels of technological proficiency, as well as to analyze their knowledge and competencies in applying AI within research and educational settings. By doing so, this study contributes to the growing body of literature on digital skills in higher education and situates its findings within the broader framework of global academic mobility (Redecker, 2017; Voogt & Roblin, 2012).

This study holds significance for policymakers, academic institutions, and program administrators by providing insights into the readiness of higher education scholars to engage effectively in the digital era, particularly within mobility initiatives. The findings offer valuable implications for the design of targeted training, capacity-building efforts, and policy measures aimed at enhancing technological and AI literacy. Ultimately, these insights will support the alignment of teacher mobility programs with global digital transformation trends and reinforce their impact on the future of higher education.

The structure of this paper is organized as follows. The subsequent section presents a review of literature pertaining to AI in education, digital literacy, and teacher mobility. This is followed by the methodology section, which outlines the study design, data collection procedures, and analytical methods employed. The results section reports on participant demographics, levels of technological literacy, and AI literacy. The discussion contextualizes these findings in light of previous literature, and the conclusion underlines the implications, limitations, and suggestions for future study.

LITERATURE REVIEW

A. Mobility Programs: Global Trends

Teacher mobility programs have become a cornerstone of the internationalization strategies in higher education. Broadly defined, these programs involve the temporary physical or virtual movement of academic staff across national borders to engage in teaching, research, and collaborative projects (Knight, 2015). The primary objectives of such initiatives are multifaceted: they aim to foster cross-cultural understanding, facilitate the exchange of pedagogical knowledge and innovative teaching practices, build international research networks, and enhance the global profile of participating institutions (de Wit, 2020). The benefits of teacher mobility are well-documented. For the individual educator, participation leads to professional development through exposure to different academic systems and student cohorts, ultimately enriching their teaching methodologies and research perspectives (Knight, 2015). For their home and host institutions, these programs act as conduits for international collaboration, curriculum innovation, and the strengthening of institutional partnerships. In the contemporary context, the nature of mobility has evolved beyond purely physical exchanges. The integration of technology has given rise to "blended" or "virtual mobility," where educators interact with international colleagues and students through digital platforms, thereby expanding the reach and inclusivity of these programs (de Wit, 2020). This digital shift, however, introduces new prerequisites for participants, necessitating a level of technological proficiency to fully engage in these hybrid academic environments.

In China, teacher and student mobility has been a central pillar of the national strategy to build world-class universities and enhance the global competitiveness of its higher education system. The scale of outbound mobility for students is immense, with China consistently being the top source of international students globally, particularly in countries like the United States, the United Kingdom, and Australia (Huang et al., 2022). For academics, outbound mobility is heavily promoted through state-sponsored programs such as the "Chinese Government Scholarship Program" and the "Short-Term Visiting Scholar Program," which fund lecturers and researchers to spend time at leading overseas institutions to upgrade their qualifications and research capabilities (Wen & Hu, 2019). Conversely, inbound mobility is also actively encouraged through initiatives like the "Study in China" initiative, which aims to attract 500,000 international students by the 2025/2026 academic year. For faculty, this involves recruiting international scholars and experts on short-term contracts to teach specialized courses and co-supervise research, a practice often embedded in university-level partnerships and Confucius Institutes abroad. These programs are typically characterized by a strong alignment with national developmental goals, focusing on science, technology, engineering, and mathematics (STEM) fields, though mobility in humanities and social sciences is also significant (Huang et al., 2022).

Similarly, Malaysia has strategically established itself as a prominent international education hub, facilitating a dynamic and multidirectional flow of academic mobility. Central to this effort is the Malaysia Education Blueprint (Higher Education) 2015–2025, which explicitly prioritizes the internationalization of both curriculum and academic staff. To support outbound mobility, initiatives such as the Academic Training and Mobility Scheme for University Lecturers (SLAB) and the MyBrain15 program offer funding for Malaysian academics to undertake doctoral studies, postdoctoral research, and sabbaticals abroad, thereby enhancing capacity and fostering international networks (Wan & Abdullah, 2021). For students, outbound mobility is promoted through mechanisms including credit transfer programs and semester-abroad schemes. More distinctively, Malaysia has seen tremendous growth in inbound mobility, actively recruiting international students, particularly from China, the Middle East, and other ASEAN nations, through twinning degrees, branch campuses of foreign universities, and its own promoted "Edu-Tourism" initiatives Wan & Abdullah, 2021). This increasing inbound student population has generated demand for both local and international faculty, contributing to inbound teacher mobility via recruitment and short-term visiting professorships. The mobility programs encompass a broad spectrum of activities, ranging from traditional faculty exchanges and collaborative research projects to structured internationalization-at-home initiatives that integrate global perspectives into the domestic educational environment.

B. Technology Literacy in Higher Education

The concept of digital literacy has evolved beyond fundamental computer skills to encompass a complex, multifaceted set of competencies. It is broadly understood as the confident, critical, and responsible use of digital technologies for learning, working, and participating in society (Redecker, 2017). Key dimensions, as outlined in frameworks like the European Digital Competence Framework for Educators (DigCompEdu), include information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving (Redecker, 2017). Within the academic sphere, these competencies manifest in an educator’s capacity to effectively locate and critically evaluate digital information, employ collaborative technologies, design and develop engaging digital instructional materials, and comprehend issues pertaining to digital identity and data privacy.

For mobile educators, technology literacy is not merely an ancillary skill but a fundamental enabler of successful international exchange. Its importance is twofold. Firstly, it is crucial for navigation and integration within a new academic environment, which may rely on different learning management systems, communication tools, and digital research infrastructures. Secondly, it is essential for sustaining collaboration beyond the physical mobility period. Mobile educators equipped with strong digital skills can maintain the professional networks and joint projects initiated during their mobility, leveraging technology for ongoing virtual co-teaching, research, and publication (Voogt & Roblin, 2012). A lack of such literacy can significantly hamper an educator's ability to integrate, collaborate, and maximize the benefits of the mobility experience.

C. Artificial Intelligence (AI) Literacy in Education

As artificial intelligence (AI) becomes increasingly pervasive, a new form of competency is required: AI literacy. While definitions are still coalescing, AI literacy can be understood as a set of competencies that enables individuals to critically evaluate AI technologies; communicate and collaborate effectively with AI; and use AI as a tool online, at home, and in the workplace (Long & Magerko, 2020). For educators, this extends beyond basic operational skills to a deeper understanding of AI's core principles, its potential and limitations, and the profound ethical implications of its use in educational settings (Liu & Bates, 2025).

The APRU whitepaper reframes the objective from merely developing individual 'skill' to building a broad institutional familiarity, which it defines as the understanding and comfort level of students, faculty, and staff in using generative AI for their day-to-day work. This familiarity encompasses not only the functional application of AI but also an awareness of the broader context, including ethics, privacy, and safety (Liu & Bates, 2025). This aligns with UNESCO's AI competency frameworks for teachers and students, which highlight awareness of debates around AI's impact on equity, environment, social justice, and human rights as a critical component of AI literacy (Miao & Cukurova, 2024; Miao & Shiohira, 2024).

The applications of AI in academia are rapidly expanding, impacting core areas of an educator's work and demanding a "pedagogy first" approach to ensure that student learning and educators' pedagogical intent remain central (Liu & Bates, 2025):

Teaching and Learning: AI-powered tools can enable personalized learning pathways, provide automated feedback, and create intelligent tutoring systems. However, a key insight is the distinction between using unguided, general-purpose AI as a potential "crutch" and deploying intentionally designed educational AI that promotes problem-solving and metacognitive skills (Liu & Bates, 2025). For instance, AI can act as a design assistant for educators, helping to align learning outcomes with assessments, thereby augmenting human capabilities rather than replacing them.

Communication: AI-driven translation tools break down language barriers, while chatbots can handle routine student inquiries, freeing up educator time for more complex, relational interactions that students highly value (Liu & Bates, 2025).

Research: AI is transforming research practices by accelerating systematic literature reviews, aiding in data analysis, and assisting in manuscript preparation. However, this requires clear rules regarding data privacy and the security of unpublished findings when using cloud-based AI platforms (Liu & Bates, 2025).

The literature reveals a discernible shift in educators' perceptions of artificial intelligence, evolving from viewing AI as a mere tool to recognizing it as a collaborative "partner" in the academic process. This evolving partnership, however, introduces a range of significant challenges. The CRAFT framework outlined in the APRU whitepaper highlights several interconnected issues, including ethical considerations, data privacy concerns, and the potential for cognitive off-loading, a phenomenon whereby excessive dependence on AI may hinder the cultivation of critical scholarly skills and undermine the essential cognitive engagement required for effective learning (Liu & Bates, 2025). Accordingly, a fundamental component of AI literacy involves cultivating metacognitive awareness that enables educators to discern not only *how* to utilize AI, but also *when* to engage it and when to rely on their own intellectual capacities.

Ultimately, fostering AI literacy is fundamental to maintaining trust across the educational ecosystem—between students and educators, between staff and leadership, and between universities and the public. A lack of literacy can erode this trust, leading to adversarial mindsets and an over-reliance on imperfect AI detection tools. Therefore, building comprehensive AI literacy is not an optional add-on but a core requirement for navigating the future of higher education responsibly and productively.

D. Gaps in Current Study

Despite the growing emphasis on both teacher mobility and digital/AI competencies, a significant research gap exists at the intersection of these domains. Current research often treats these domains in isolation, with extensive literature on the structures and outcomes of mobility programs on one hand, and on the development of digital and AI literacy in static, non-mobile faculty on the other. Notably, there is a pronounced scarcity of studies that specifically investigate the technological and AI literacy of educators engaged in teacher mobility programs.

This gap is particularly salient and critical within the context of Chinese academia. China has made substantial national investments in educational technology and AI (Zhao & Huang, 2020; Huang et al., 2022), and its scholars are increasingly active in global academic exchanges. However, as highlighted in the present study, little is known about how Chinese academics, who are central to these mobility initiatives, navigate the digital demands of international collaboration. The extent to which they actively and effectively incorporate digital tools and AI into their teaching, research, and communication practices within the context of mobility programs remains insufficiently explored.

The APRU whitepaper by Liu & Bates (2025) underscores that the higher education sector's response to generative AI has largely been "piecemeal and reactive," focusing on immediate concerns like academic integrity rather than "systematic integration." This reactive approach is mirrored in the context of mobility programs. There is a critical void in understanding how these programs are addressing the five interdependent elements of

the **CRAFT framework—Culture, Rules, Access, Familiarity, and Trust**—for their mobile educators. Key unanswered questions include:

Rules & Access: What specific policies govern the use of AI tools by mobile educators working across different national jurisdictions and digital infrastructures? How do institutions ensure equitable access to advanced AI tools for visiting scholars, especially those from low- and middle-income countries, to prevent the "widening [of] existing digital divides" (Liu & Bates, 2025, p. 19)?

Familiarity: How are mobility programs systematically building the AI familiarity of participants, moving beyond basic digital literacy to a deep understanding of AI's pedagogical applications and ethical implications? The current "lack of a generative AI strategy" in many institutions (Liu & Bates, 2025, p. 22) suggests this is likely a major oversight in mobility planning.

Culture & Trust: How do differing regional, institutional, and disciplinary cultures around AI, as detailed by Liu & Bates (2025), impact collaboration and trust within mobile academic teams? The role of mobility programs in either bridging these cultural divides or inadvertently exacerbating them is entirely unexamined.

Understanding these dimensions is critical, as digital and AI competence is a key determinant of effective academic exchange in the 21st century. The current research begins to address this void by examining the technological and AI literacy of Chinese academics in a mobility program. However, it also reveals the need for a more structured, framework-driven approach, as proposed by Liu & Bates (2025), to systematically embed digital and AI literacy as a core component of academic mobility, thereby identifying a crucial area for further scholarly inquiry and institutional support.

METHODOLOGY

Research Design

This study employed a mixed-method approach with quantitative descriptive and qualitative reflection to examine the experiences and practices of academic staff from Taizhou University, China, who participated in a teacher mobility program. This approach was chosen to characterize the attributes of a specific sample through the collection of quantifiable and quantitative data.

Participants

The target samples for this study comprised academic staff from Taizhou University, China, who actively participated in the teacher mobility program. These individuals were selected due to their distinctive experience in cross-institutional teaching and research collaboration, rendering them well-suited to address the goals of this study. Their participation was entirely voluntary.

Data Collection on Survey Instrument

To obtain a comprehensive understanding of the participants' characteristics and practices, the survey instrument was structured into several sections. The first section focused on collecting demographic information, including age, gender to provide contextual background. The second section addressed teaching experience, encompassing pedagogical approaches, years of service, and specialization. Distinct sections were dedicated to gauging participants' comfort and confidence in utilizing digital technologies and artificial intelligence (AI) within educational settings. Additionally, to explore the impact of mobility on academic collaboration and knowledge dissemination, the survey incorporated items related to research activities, publication practices, and professional interactions. To capture nuanced insights beyond quantitative data, open-ended questions were also included, allowing participants to reflect more deeply on their experiences.

All eligible participants were invited to complete the online survey through institutional communication channels. The survey link, hosted on Google Forms, was distributed alongside clear instructions and assurances of confidentiality. Data collection occurred within a designated timeframe, allowing participants the flexibility

to respond at their convenience. To increase response rates and ensure adequate representation, follow-up reminders were issued. The online distribution method facilitated a more efficient data collection process while minimizing logistical challenges, particularly within the context of the study's focus on academic mobility.

Data Collection on Qualitative Reflection

The qualitative data consists of written reflections gathered from participants at the conclusion of the modules. Participants were given a set of structured, open-ended questions that prompted them to reflect on the module content and its application to their own professional contexts.

For example, prompts included:

• "Reflect on how Artificial Intelligence can be applied in your teaching and learning context"

• "What opportunities and challenges do you foresee in integrating AI tools in your classroom or research?"

• "Provide one concrete example of how you might use an AI tool"

• "Reflect on your own academic writing and publication journey"

This method of data collection was chosen to elicit detailed, thoughtful, and personal accounts, allowing for an in-depth exploration of the participants' evolving perspectives. The reflections served as a rich source of qualitative data, capturing individual insights, proposed applications, and perceived challenges.

Analysis of Data

Both quantitative and qualitative methods were used in the data analysis. The quantitative results from each survey segment were compiled and presented using descriptive statistics. Patterns in the respondents' demographics, instructional strategies, and technological literacy were discovered according to these statistical metrics. Thematic description was used to analyze open-ended answers from the reflection sections in order to identify recurrent themes and viewpoints. While preserving the rigour and clarity required for quantitative descriptive research, this combination of descriptive and thematic description provided a comprehensive knowledge of the participants' experiences and activities.

RESULTS AND DISCUSSION

Demographics Survey

The study involved fourteen respondents, evenly balanced by gender, with seven males (50%) and seven females (50%). Regarding age distribution, the majority of participants (n = 10) were under 49 years old, while the remaining four were aged 50 and above. This distribution reflects a well-rounded representation of both mid-career and senior academics, thereby capturing perspectives from individuals at varied stages of their professional trajectories.

In terms of professional experience, the cohort comprised predominantly highly experienced educators. Notably, eight participants reported over 20 years of teaching experience, highlighting the presence of senior teachers with substantial pedagogical expertise. Such extensive experience is valuable for capturing insights that are grounded in long-term academic practice, while the perspectives of those with fewer years of service enrich the data with views shaped by more recent training and exposure to evolving educational technologies.

The participants represented a diverse range of specializations, encompassing both humanities and applied fields. Their areas of expertise included *discourse analysis, English teaching, language, literature and linguistics, teacher development, cross-cultural communication, materials engineering, British and American literature and translation, digital image processing, rhetoric, industrial economics, urban planning,* and *applied linguistics*. This diverse disciplinary spread ensures that the findings reflect not only language and literature-based

disciplines but also perspectives from technical and professional domains, thereby providing a comprehensive, multidimensional view of teaching and research practices.

Regarding digital competencies, participants' technology literacy and AI literacy were predominantly characterized as possessing average knowledge. This suggests that while the participants generally demonstrate competence in utilizing digital tools and possess a foundational understanding of AI concepts, they do not yet qualify as advanced users. The designation of "average knowledge" underscores significant opportunities for targeted professional development, especially in relation to emerging technologies and the application of AI within educational contexts.

When asked about specific AI tools, the respondents reported familiarity with several widely used platforms. These included ChatGPT, as well as Deepseek, Tecent Yuanbao, Doubao, and Qwen. The variety of tools reported indicates that participants are engaging with a diverse range of AI technologies rather than being limited to a single ecosystem. This reflects both global trends, exemplified by platforms such as ChatGPT, and regionally developed applications, such as Yuanbao and Doubao. Such exposure illustrates a willingness to integrate AI into academic and professional practices, although the overall self-assessed proficiency remains at an intermediate level. TABLE 1 presents a detailed demographic profile of the participants.

Table 1: Descriptive Demographic

Category	**Detail**
Total Participants	14
Gender	7 Male, 7 Female
Age Range	10 respondents below 49 years old 4 respondents above 50 years old
Teaching Experience	8 respondents with more than 20 years of teaching 5 respondents with 10 - 20 years 1 respondent with 5 - 10 years
Specializations	Discourse Analysis, English Teaching, Language, Literature & Linguistics, Teacher Development, Cross-cultural Communication, Materials Engineering, British and American Literature and Translation, Digital Image Processing, Rhetoric, Industrial Economics, Urban Planning and Applied Linguistics.
Technology Literacy	Mostly average knowledge
AI Literacy	Mostly average knowledge

Qualitative Reflection

Key themes that emerged from this study include:

The transformative role of AI in pedagogy, shifting from a mere tool to an active collaborative partner.

The opportunities and challenges associated with AI integration, particularly ethical considerations, data privacy, and the risk of cognitive offloading.

The influence of AI on academic research and writing processes, encompassing activities from literature review to journal selection

Participant reflections underscore the transformative potential of AI in educational practice, with AI increasingly viewed not simply as a supportive instrument but as a collaborative agent in teaching and learning. Educators highlighted AI's capacity to enhance classroom practices by providing adaptive feedback, personalized learning support, and improved engagement strategies. This paradigm shift, however, prompted critical discussions regarding the redefinition of the teacher's role, emphasizing the necessity for human expertise to balance technological mediation and preserve the integrity and creativity inherent in the learning process.

Simultaneously, participants noted both the opportunities and challenges associated with AI integration. While AI holds considerable potential to accelerate various research tasks, including literature review, journal selection, and manuscript preparation, it also raises significant concerns related to ethical use, data privacy, and the potential for over-reliance that may result in cognitive offloading. These issues reflect a growing awareness that while AI can enhance efficiency and innovation, critical thinking and scholarly judgment must remain at the forefront. Overall, the reflections point toward a future where AI reshapes academic practices, but its sustainable integration will depend on striking a balance between technological possibilities and ethical responsibilities. By integrating the quantitative finding of knowledge with the nuanced qualitative themes, the potential between participants' moderate self-assessed skills and their understanding of AI's collaborative could be explored.

CONCLUSION

The demographic findings reveal a balanced representation of gender and age, encompassing both mid-career and senior academics participants. A significant proportion of participants reported over twenty years of teaching experience, demonstrating substantial pedagogical expertise across a wide range of disciplines, including applied linguistics, literature, engineering, and urban planning. Despite this diverse and extensive academic background, respondents consistently indicated average levels of technological and AI literacy. Their familiarity primarily encompassed platforms such as ChatGPT, Deepseek, Tencent Yuanbao, Doubao, and Qwen. These findings suggest a general openness to adopting digital technologies, while also highlighting the need for structured initiatives to bolster both confidence and competence in effectively utilizing these tools.

These findings underscore the critical importance of integrating technology and AI literacy into teacher mobility programs. As mobility initiatives aim to foster academic exchange, collaboration, and innovation, equipping educators with stronger digital skills will enable them to fully engage with emerging teaching and research practices across international contexts. Looking forward, the future of teacher mobility in the digital age must prioritize not only cross-cultural and disciplinary exchange but also the cultivation of digital competence. By embedding AI and technology training into mobility frameworks, programs can empower educators to be more adaptable, future-ready, and capable of contributing to global academic ecosystems. The limitations of this study arise from the limited sample size; statistical tests could not be carried out; hence the results cannot be generalized.

Future efforts in teacher mobility programs should systematically incorporate digital and AI literacy training as a foundational element of academic exchange, thereby ensuring that educators develop both cultural adaptability and technological proficiency. This can be achieved through tailored workshops on emerging AI tools, collaborative projects that integrate digital platforms, and mentorship models that pair digitally skilled academics with those less experienced. Additionally, program designs should anticipate the rapid evolution of educational technologies by incorporating flexible curricula that adapt to new tools and practices. By doing so, mobility initiatives will not only enhance cross-border collaboration but also prepare educators to thrive in a global academic landscape increasingly shaped by digital transformation.

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