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Exploring EFL Lecturers' Needs for AI-Assisted Teaching Strategies: A Qualitative Basis for Module Development in Henan, China

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ABSTRACT

Artificial intelligence (AI) offers strong potential to enhance English language teaching, yet its pedagogical integration in Chinese universities remains uneven. Current training and practice often emphasize the technical use of individual tools rather than their purposeful application in communicative and interactive instruction. To address this gap, the present study examined the challenges and needs of university English as a Foreign Language (EFL) lecturers as a basis for developing a training module on AI-assisted teaching strategies in Henan, China. A qualitative design was employed, combining document analysis with semi-structured interviews involving 12 lecturers. Thematic analysis indicated that although lecturers had begun to explore AI and acknowledged its potential, their use was fragmented and largely confined to peripheral tasks. They faced barriers such as insufficient discipline-specific training, limited institutional support, and difficulties in aligning AI with teaching objectives and student proficiency levels. At the same time, they expressed strong expectations for practical and hands-on guidance, including clear objectives, classroom-based examples, step-by-step resources, and theoretically informed direction. These findings highlight a gap between current practices and desired outcomes and provide a foundation for designing a contextually relevant training module that supports the effective and responsible integration of AI in EFL teaching.

Highlights:

• Reveals a clear gap between lecturers' fragmented exploratory use of AI tools and their strong demand for systematic, pedagogically grounded integration.

- Demonstrates that the lack of discipline-specific and practice-oriented training is the key barrier shaping lecturers' AI adoption in English language teaching.
- Provides empirical support for applying McKillip's Discrepancy Model and the Dick and Carey instructional design model to technology integration in EFL contexts.
- Underscores the critical role of Technological Pedagogical Knowledge (TPK) within the TPACK framework, as lecturers struggle to embed AI into pedagogy despite basic technological awareness.
- Offers practical implications by calling for hands-on, contextualized, and theoretically informed training modules, supported by institutional and policy-level initiatives.

1. Introduction

Artificial intelligence (AI) is reshaping education worldwide. The United Nations Educational, Scientific and Cultural Organization(UNESCO)'s Guidance for Generative AI in Education and Research emphasizes its potential for personalized learning, real-time feedback, and pedagogical innovation[1]. Meanwhile, the Organisation for Economic Co-operation and Development (OECD)'s AI and the Future of Skills highlights its role in digital transformation and future-oriented competencies[2]. In English as a Foreign Language (EFL) teaching, AI tools enhance listening, speaking, reading, and writing through adaptive pathways and instant feedback[3–5]. For example, AI-based speech recognition improved learners' comprehension and reduced anxiety[6], while generative AI writing feedback tools strengthened writing proficiency, revision, and confidence[4]. Overall, AI integration benefits both emotional engagement and skill development.

Although AI holds immense promise for education, targeted empirical research on its integration with pedagogical strategies remains limited, particularly in the context of English teaching at Chinese universities. Drawing on a systematic review, Wang, et al. observed that despite the growing use of generative AI in language education, studies rarely address its pedagogical application in Chinese contexts[7]. Likewise, Kundu and Bej through a systematic review, showed that while AI can improve EFL learners' performance, research often overlooks its alignment with instructional design and teacher readiness[3]. Echoing these findings, Shi et al. emphasized that AI-assisted English teaching still lacks empirically grounded frameworks, underscoring the need for context-specific strategies in Chinese universities[8]. Building on this evidence, existing literature tends to focus on the technical applications of AI,such as automated grading, feedback generation, and content delivery[9,10], while fewer studies explore how AI can be effectively embedded into instructional design, student-centered strategies, and classroom management practices[7,11,12]. This imbalance leaves a gap in understanding how AI can be pedagogically harnessed in higher education English teaching.

In addition to the research gap, there is also a significant training gap in China. Most existing programs focus on digital tool proficiency. They pay less attention to the pedagogical integration of AI for communicative and interactive English teaching[9,13–16]. For example, Zou and Wang point out that EFL teachers often lack guidance in adapting AI to classroom needs[13]. Liu and Chang note that teachers passively adapt to AI rather than aligning it with teaching goals[14]. Similarly, Liu Kangtong finds training programs focus on system use over pedagogical design[15]. Ding and Zhang emphasize the need for teaching-oriented AI training[9], while Gou highlights the absence of communicative application in current development models[16]. These examples illustrate that training opportunities certainly exist. However, they remain technology-centered rather than teaching-oriented, highlighting the urgent need for a pedagogically grounded AI training module in the Chinese context.

At the policy level, China has launched initiatives such as the AI + Education Action Plan (2025–2027)[17] and the Teachers' Digital Literacy Standards (2022)[18]-to promote intelligent, pedagogically grounded teaching. Yet, while these policies outline ambitious national goals for AI integration, specific implementation pathways and discipline-oriented professional training mechanisms are still evolving, particularly within university English education. This gap

between policy vision and classroom practice highlights the need to examine lecturers' real experiences and professional training needs in achieving effective AI-assisted pedagogy.

Therefore, this study aims to address this research-practice gap by designing a contextually relevant, pedagogically oriented training module. The development of such a module requires a clear understanding of lecturers' actual needs and challenges.Needs analysis is therefore a critical first step in identifying the specific gaps, priorities, and contextual constraints that must inform the design. Accordingly, this paper focuses on the needs analysis phase, examining the perceptions and requirements of university EFL lecturers in China regarding AI-assisted teaching strategies.

To guide this investigation, the study adopts McKillip's Discrepancy Model of needs analysis, which conceptualizes "need" as the gap between the current state (what is) and the desired state (what should be)[19]. Within this framework, identifying lecturers' challenges reflects the diagnosis of their present situation, while identifying their needs highlights the resources, skills, or training required to move toward the desired integration of AI-assisted teaching strategies.

Accordingly, this paper addresses the following research questions:

What challenges do EFL lecturers face in integrating AI-assisted teaching strategies?

What are the needs of EFL lecturers regarding the integration of AI-assisted teaching strategies?

2. Literature Review

2.1. AI-Assisted Teaching Strategies

Teaching strategies are generally defined as deliberate pedagogical approaches and methods employed by educators to facilitate student learning, promote engagement, and achieve instructional objectives[20,21]. In language education, teaching strategies encompass a wide range of practices, including task-based learning, communicative activities, scaffolding, and formative assessment, that guide how teachers structure content and interactions to support learners' skill development[20–22].

Building on the notion of teaching strategies, AI-assisted teaching strategies can be defined as pedagogical approaches that purposefully integrate artificial intelligence (AI) technologies, such as adaptive learning systems, intelli-

gent tutoring, natural language processing, and automated writing evaluation, into instructional design, classroom delivery, and assessment, with the aim of enhancing teaching effectiveness and supporting learners' language development[23–26]. In the context of EFL teaching, these strategies move beyond isolated tool use to align AI affordances with pedagogical objectives, enabling personalized learning pathways, instantaneous corrective feedback, and interactive practice opportunities that foster the development of listening, speaking, reading, and writing skills[3,4,6].

Despite these advances, existing research shows several limitations. First, most studies focus on the technical functionalities of AI tools or their effects on discrete skills, such as automated scoring, oral fluency practice, or writing feedback, rather than their systematic integration into broader instructional frameworks[9,10]. This tool-centered orientation overlooks how AI can be holistically embedded into communicative and student-centered pedagogical practices. Second,While there is growing evidence that AI enhances learners' outcomes and motivation, comparatively fewer empirical studies have examined teachers' perspectives, practices, and the challenges they encounter in adapting these technologies to classroom realities[27,28]. This gap downplays the central role of lecturers as mediators of effective AI use.

2.2. Teacher Training and Professional Development in China

Within the Chinese EFL context, research on AI in education has expanded rapidly, yet teacher training remains a major weakness. Studies show that existing initiatives often improve technical proficiency but give little attention to pedagogical integration. For example, Zulianti et al. demonstrated that a TPACK-based program enhanced novice teachers' ability to use AI tools, but teachers still struggled to apply these tools in communicative and strategy-oriented practices[29]. Similarly, Pan and Wang reported that many lecturers possess low levels of AI literacy, particularly in evaluating and integrating AI for teaching purposes[30].

At the research level, Qin and Zhang found that although AI-related studies in education have grown significantly, few focus on teacher training. Qualitative evidence further highlights this gap[31]. Zhou et al. revealed that Chinese EFL teachers often experience stress, identity ten-

sions, and uncertainty when using AI in classrooms, pointing to an urgent need for systematic training and institutional support[5].

Recent policy documents signal growing expectations for technology-supported teaching. The Outline for Building an Educational Power (2024–2035)[32] calls for improving teachers' capacity to use intelligent technologies in classroom instruction and assessment. The Opinions on Accelerating the Digitalization of Education (2025)[33] further emphasize integrating digital tools into routine teaching and professional development. At the provincial level, Henan's Action Plan for Accelerating New Educational Infrastructure (2023–2025)[34] prioritizes smart infrastructure and AI-enabled platforms for universities. However, while these policies stress "intelligent teaching ability", they do not provide discipline-specific guidance for EFL pedagogy, leaving lecturers without targeted support.

Taken together, these studies indicate that training opportunities exist but remain fragmented, technology-centered, and insufficiently pedagogical. Teachers often learn how to operate AI tools but lack structured guidance on designing communicative and student-centered AI-assisted strategies. This training gap underscores the necessity of developing a needs-based professional development module for Chinese EFL lecturers.

2.3. Theoretical Framework

Needs analysis plays a central role in developing training that responds to actual requirements rather than abstract assumptions. McKillip's Discrepancy Model defines need as the gap between the current state (what is) and the desired state (what should be)[19]. This perspective provides a practical lens for identifying lecturers' challenges and expectations. Witkin and Altschuld further highlight systematic procedures for assessing and prioritizing needs in educational settings, emphasizing that training should be both responsive and context-specific[35].

To ensure that needs identified can be transformed into effective instructional practices, the Dick and Carey model offers a structured framework. It emphasizes the alignment of objectives, content, methods, materials, and evaluation as interdependent elements of instructional design[36]. Linking needs analysis with this model ensures that training modules are not only grounded in empirical findings but also system-atically organized for coherent implementation in teacher education.

At the same time, teachers' ability to integrate AI into English language teaching can be meaningfully examined through the Technological Pedagogical Content Knowledge (TPACK) framework[37]. TPACK highlights the interaction of technological, pedagogical, and content knowledge, which is crucial for understanding lecturers' professional strengths and gaps. In this study, needs analysis and instructional design are interpreted within the TPACK framework to reveal specific deficiencies in technological–pedagogical integration. This theoretical alignment provides a foundation for designing a training module responsive to the contextual realities of EFL teaching in China.

2.4. Summary of Literature Review

The review highlights that while AI-assisted teaching strategies provide opportunities for personalization, real-time feedback, and interactive practice in EFL learning, most existing studies remain tool-centered and focus on discrete skills rather than systematic pedagogical integration. Teachers' perspectives and practical challenges also receive limited attention, despite their crucial role in effective implementation.

In the Chinese context, professional development initiatives are fragmented and largely technical, leaving lecturers with insufficient guidance on integrating AI into communicative and student-centered teaching. To address this gap, a needs analysis is required to identify the discrepancies between current practice and desired competencies. Drawing on McKillip's Discrepancy Model[19], this study seeks to establish an evidence-based foundation for designing a training module that responds to the actual needs of EFL lecturers in Henan.

3. Materials and Methods

3.1. Research Design

This study adopted a Design and Development Research (DDR) design[38], which is well suited for systematically developing and evaluating educational interventions through iterative phases. The present paper reports on the first phase, needs analysis, which employed a qualitative

approach to examine university EFL lecturers' challenges and needs regarding AI-assisted teaching strategies.

Data were collected through semi-structured interviews and document analysis. The interview data provided in-depth insights into lecturers' experiences, perceptions, and expectations, while the analysis of policy and institutional documents offered a broader contextual understanding of current educational priorities. Specifically, the document analysis included national, provincial, and university-level directives on digital transformation, teacher professional development, and AI integration in higher education. These documents were reviewed through qualitative content analysis to identify policy statements related to teacher training, pedagogical innovation, and institutional implementation.

Integrating both data sources allowed for triangulation, ensuring that the identified challenges and needs were interpreted not only from lecturers' perspectives but also within the framework of policy expectations and institutional contexts.

3.2. Research Participants

The sample for this study includes English lecturers from four public universities in Henan Province, China. Henan Province was selected because of its large population and influential higher education system, while the four chosen universities represent a diverse range of institutions—from top-tier to key regional universities—offering accessibility, relevance, and relatively comprehensive insights into English teaching practices and AI-assisted strategies.

In this study, a non-probability sampling strategy combining purposive and snowball techniques was employed. Initially, purposive sampling was used to identify key informants-university English lecturers with substantial knowledge and experience in AI-assisted teaching. These participants were deliberately selected for their ability to provide rich and relevant insights into the study topic[39]. Following this, snowball (chain-referral) sampling was applied: each interviewed lecturer was asked to recommend colleagues who also met the inclusion criteria and had relevant experience. This process helped expand the participant pool through professional networks while maintaining relevance to the research purpose[40].

In total, 12 lecturers took part in semi-structured interviews during the needs analysis phase.According to Creswell and Creswell[41], qualitative studies typically involve 10–30 participants, with the final number determined by data saturation—the point at which no new information emerges. In this study, saturation was reached after the twelfth interview, when the last two interviews produced no new themes or categories, only confirming previously identified patterns. This indicated that additional interviews were unlikely to generate further insights[39,42]. Therefore, 12 participants were deemed sufficient to ensure information richness and thematic completeness.

The aim of this phase was to identify specific challenges and needs of lecturers in implementing AI-assisted teaching strategies.In parallel with the interviews, document analysis was conducted on publicly available national, provincial, and institutional policy documents related to AI integration and teacher professional development. As these materials do not involve human subjects, they complemented the interview data by providing contextual information and required no additional ethical clearance. **Table 1** in the end provides an overview of the participants' demographic information, including age range, gender, teaching experience, and frequency of AI tool usage.

3.3. Research Instruments

A semi-structured interview guide served as the primary instrument for data collection. This instrument was chosen because it allows for both comparability across participants and flexibility to explore individual perspectives in depth. The interview questions were developed based on the theoretical framework outlined in the literature review, drawing from McKillip's Discrepancy Model[19], Witkin and Altschuld's needs assessment framework[35], the Dick et al. model[36], and the TPACK framework[37]. In addition, recent empirical studies on AI integration in English language teaching[43–45], additional questions were derived directly from the research objectives to ensure alignment.

The initial draft of the interview protocol was reviewed by two experts,one in language education and another in educational technology, to ensure content validity and coherence with the study objectives. Based on their feedback, several questions were refined. For example, the initial broad item "What do you know about AI in teaching?" was revised to "Have you ever used artificial intelligence (AI) tools in your teaching or lesson preparation? If yes, which tools?" to elicit more specific and relevant responses.

Table 1. Demographics of Participants.

Variable	Category	Frequency (n = 12)
Gender	Female	8
	Male	4
Age Range	25–34	3
	35–44	6
	45–55	4
Teaching Experience	1–5 years	2
	6–10 years	4
	11–15 years	4
	16+ years	2
AI Tool Use (Frequent)	Translation tools (Baidu, Youdao)	8
	ChatGPT, DeepSeek, doubao, kimi	12
	U campus, Learning Through	5
AI Tool Use (Occasional)	iTest (essay grading)	3
	Rain Classroom (attendance/quizzes)	4

The revised protocol was then piloted with two lecturers who shared similar backgrounds with the target participants, in order to assess the clarity and relevance of the questions. Minor modifications were made following the pilot test. For instance, two overlapping items on "AI challenges" and "technical difficulties" were merged into a single, broader question: "What main difficulties have you experienced, or do you expect, when trying to use AI tools in your teaching?"

Finally, the semi-structured interview guide consisted of five sections with twelve questions, covering: (1) background information, including teaching experience and AI awareness; (2) current state of AI use in teaching, with examples; (3) challenges and barriers to integration; (4) needs and expectations for training content, formats, resources, and evaluation; (5) attitudes, willingness, and future outlook. The final version of the guide is presented in **Appendix A**.

In addition to the interview instrument, a document analysis guide was developed to support the review of policy and institutional documents. The guide included categories such as document type, issuing authority, key objectives, teacher development measures, references to AI or digital pedagogy, and implications for higher education English teaching. This coding structure ensured a consistent and transparent process in identifying themes relevant to lecturers' professional needs and contextual factors influencing AI-assisted teaching. The approach followed Bowen's principles of qualitative document analysis, emphasizing focused reading, coding, and thematic categorization[46].

3.4. Data Collection Procedure

Semi-structured interviews were conducted to collect data from the participants in this study. The participants were 12 university EFL lecturers from four public universities in Henan Province, China. Participants were recruited through purposive and snowball sampling, as described in Section 3.2. Before the interviews, each participant received an electronic information sheet via email detailing the study's purpose, procedures, confidentiality measures, and voluntary nature. Written informed consent was obtained electronically before data collection. All procedures involving participants complied with the ethical standards outlined in Section 3.6, and prior ethics approval was granted by the Research Ethics Committee of Henan Polytechnic University.

The interviews were conducted online via Tencent Meeting, allowing participants to join from their respective campuses or offices. Each session lasted approximately 30–60 minutes and followed the semi-structured interview guide described in Section 3.3. With participants' permission, all interviews were audio-recorded and supplemented with brief field notes to support accurate transcription.

To enhance the credibility of the findings, member checking was conducted after each interview. Specifically, participants were provided with the verbatim transcript of their interview via email and invited to review it for factual accuracy and representational faithfulness. In cases where participants preferred a shorter version due to time constraints, a concise summary of key points was shared instead. Each participant was asked to confirm or clarify any

statements that might have been misinterpreted, and their feedback was incorporated into the final dataset. This approach ensured that all participants had the opportunity to verify their own contributions while accommodating individual preferences for reviewing materials. In addition, peer debriefing was undertaken with an expert in language education to review the research process, coding strategies, and interpretations. These steps helped strengthen the trustworthiness and confirmability of the study's results.

In addition to the interviews, nineteen national, provincial, and institutional policy documents were collected from official sources. These documents, focusing on teacher development and AI integration in education, were reviewed to provide contextual understanding and to triangulate the interview findings [46].

3.5. Data Analysis

A thematic analysis was conducted following Braun and Clarke six-phase framework [47]: (1) familiarization with the data, (2) generation of initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. The process was guided by Fereday and Muir-Cochrane's hybrid inductive–deductive approach [48]. This combination allowed themes to emerge both from participants' accounts (inductive) and from the researcher's conceptual lens based on the Discrepancy Model (deductive).

Two overarching categories—Current State and Desired State—were established to distinguish existing practices from future needs. Within these categories, four main themes and corresponding sub-themes were identified and refined through iterative coding. Participant quotations are reported using anonymized codes (e.g., P1, P2). Peer debriefing and member checking were conducted to enhance the credibility and confirmability of the analysis [49].

In addition to the interview data, nineteen national, provincial, and institutional policy documents were analyzed to enrich and triangulate the findings [46]. The documents were reviewed using qualitative content analysis to extract statements related to teacher training, AI-assisted pedagogy, and professional development. Insights from these documents were used to contextualize and corroborate the inter-

view themes, ensuring that the findings reflected both lecturers' experiences and the broader policy environment. The full list of documents reviewed is provided in **Appendix B Tables A1–A3**.

3.6. Ethical Considerations

This research strictly adhered to established ethical principles to protect the dignity, rights, and well-being of all participants. The study was reviewed and approved by the Research Ethics Committee of Henan Polytechnic University. Prior to the interviews, participants received a clear explanation of the study's objectives, procedures, and possible consequences. Informed consent was obtained to ensure that involvement was entirely voluntary, with the option to withdraw at any stage without facing any adverse outcomes. Confidentiality was maintained through strict anonymization, and all recordings and transcripts were securely stored with attention to data protection. The collected information was used exclusively for academic purposes and presented in a way that safeguarded participants' identities. Interviews were conducted in a respectful, open, and non-judgmental manner, encouraging participants to share their perspectives freely.

4. Results

This chapter presents findings from two main data sources: semi-structured interviews with twelve university EFL lecturers and the analysis of nineteen national, provincial, and institutional policy documents related to AI and teacher professional development. The interviews reveal lecturers' experiences, challenges, and expectations regarding AI-assisted English teaching, while the document analysis provides a broader policy and institutional context. Integrating these sources enables a comprehensive needs analysis that captures both lecturers' classroom realities and the policy directions shaping their professional development. A complete list of analyzed documents is provided in **Appendix B Tables A1–A3**. The results are organized into four sections: current applications of AI, challenges and barriers, needs and expectations, and attitudes and suggestions for future development. **Table 2** provides a summary of representative policy documents analysis.

Table 2. Overview of Analyzed Policy and Institutional Documents.

Level	Document Title	Year	Issuing Authority	Primary Focus
National	Outline for Building an Educational Power (2024–2035)	2025	Communist Party of China (CPC)Central Committee & State Council	Promotes AI-driven educational modernization and personalized learning
National	Opinions on Accelerating Education Digitalization	2025	Ministry of Education (MOE) & Eight Ministries	Expands digital platforms and teacher-training mechanisms
Provincial	Henan "AI + Education" Three-Year Action Plan (2025–2027)	2025	Henan Provincial Dept. of Education	Integrates AI into curricula and teacher professional development
Provincial	Action Plan for Accelerating New Educational Infrastructure (2023–2025)	2023	Henan Provincial Dept. of Education	Develops smart-campus infrastructure and AI platforms
Institutional	Henan University Notice on Smart Course Construction and AI Empowerment	2025	Henan University	Encourages AI-based course innovation and formative feedback
Institutional	Zhengzhou University Four-in-One Quality Assurance System	2025	Zhengzhou University	Emphasizes reflective and evidence-based teaching

4.1. Current Application of AI in EFL Teaching

Most of the interviewed lecturers demonstrated a basic awareness of AI tools, yet their actual application remained fragmented and superficial. nine out of twelve lecturers reported using translation or generative tools (e.g., Baidu Translate, Youdao, ChatGPT, Deepseek) mainly for lesson preparation. six out of twelve occasionally integrated AI-generated examples or exercises into their classes, but such practices were sporadic and had not evolved into systematic teaching strategies.

"I sometimes use Baidu Translate or ChatGPT to write lesson plans when preparing lessons, but I rarely use them directly in class." (P1)

At the same time, several lecturers showed strong exploratory attitudes and attempted to apply AI in broader teaching scenarios. For instance, some used iTest for essay grading, employed Rain Classroom for attendance and quizzes, or relied on Doubao and Kimi to prepare teaching materials. Five out of twelve emphasized that AI holds potential as a "teaching assistant," capable of taking over repetitive administrative tasks, thereby allowing teachers to focus more on classroom interaction and guiding students' thinking.

"I tried iTest to grade writing tasks, and it really saved time, but I still had to double-check the results." (P12)

"The AI-based attendance function in Rain Classroom is convenient, but it is not well integrated with my course content." (P2)

"Doubao and Kimi sometimes help me generate lesson plan ideas quickly, but I still don't know how to embed them effectively in real classroom teaching." (P6)

Nevertheless, the lecturers consistently reported that a clear gap remains between using AI tools and pedagogically integrating them into teaching strategies. While they expected AI to support formative assessment, classroom interaction, and differentiated instruction more precisely, they lacked concrete methods and experience to achieve these goals. As a result, AI applications largely stayed at a supportive rather than integrative level.

Document analysis reinforced the finding that a clear gap persists between national policy ambitions and actual classroom practices. The Outline for Building an Educational Power (2024–2035)[32] highlights AI as a driving force for "intelligent, personalized, and data-driven teaching," calling for its integration into curriculum design and assessment reform. Similarly, the Guidelines on Strengthening the Application of "Three Classrooms"[50] promote the normalization of hybrid and online intelligent classrooms to enhance teaching quality. At the institutional level, Henan University's Notice on "Smart Course Construction and AI Empowerment"[51] echoes these national goals by encouraging lecturers to use AI for course innovation and formative feedback. However, despite these initiatives, no evidence of discipline-specific frameworks or localized implementation models was found, mirroring lecturers' fragmented and exploratory use of AI

tools in practice.

In conclusion, lecturers' interest in and exploration of AI are growing, and some have actively experimented with a variety of tools. However, they generally lack systematic strategies for integrating AI into teaching. Thus, the key demand for training modules lies not in the question of whether to use AI, but in how to embed AI effectively into classroom teaching strategies—enabling AI to function as a genuine teaching assistant and facilitator of learning.

4.2. Challenges and Barriers

Most lecturers reported that they lacked adequate institutional training or discipline-specific guidance on integrating AI into English teaching. Although some universities had organized general workshops on AI for the humanities or STEM fields, none specifically addressed the needs of English language lecturers. As a result, many teachers felt they had to rely on self-exploration without a clear pedagogical or policy framework.

"Our university has offered AI training sessions, but they were too general and did not really address English teaching." (P9)

In addition, lecturers highlighted multiple technical and pedagogical challenges. Eight out of twelve noted that while AI tools are powerful, they often fail to align with course objectives, student proficiency levels, and classroom activity design. Several mentioned that unstable internet connections disrupted class flow, and that advanced features of some tools required extra fees, making them less accessible. Others admitted that limited AI literacy hindered their ability to fully leverage these tools. Moreover, lecturers pointed out that without carefully crafted and detailed prompts, AI responses tended to be overly broad and lacked sufficient pedagogical relevance.

"The tools are strong, but I don't know how to adapt them to my course objectives or my students' levels." (P6)

"Sometimes the network is slow, which interrupts my teaching. Also, many advanced features need extra payment, so not all teachers can use them." (P7)

"If I don't provide very specific instructions, the AI's answers are too general to be helpful in class." (P4)

Concerns about academic integrity and over-reliance were also prominent. Seven out of twelve lecturers worried that students might become excessively dependent on AI, particularly in writing tasks, which could diminish their independent thinking and authentic language production.

"I'm most worried that students will rely too much on AI, especially in writing, and stop thinking for themselves." (P6)

Document analysis further illuminated structural and institutional barriers underlying lecturers' reported challenges. The Action Plan for Accelerating New Educational Infrastructure in Henan Province (2023–2025)[34] stresses the need to upgrade digital connectivity and AI platforms across universities, yet its implementation remains uneven, particularly in language departments. The Opinions on Accelerating the Digitalization of Education[33] issued by nine national ministries highlight the importance of data platforms and intelligent resource sharing, but offer little guidance on discipline-specific adaptation. Similarly, the Henan Provincial "AI+" Action Plan (2024–2026)[52] calls for technological empowerment in teaching but does not address the pedagogical competencies required for effective AI integration. These findings suggest that despite strong top-down initiatives, gaps persist in translating infrastructure investment and general digitalization policies into targeted support for EFL lecturers, resulting in limited training, inadequate resources, and inconsistent institutional backing.

To sum up, the challenges faced by lecturers span three interrelated dimensions: organizational gaps (lack of targeted training and support tailored to English teaching), capacity-related difficulties (misalignment with teaching goals, limited AI literacy, and accessibility issues such as network stability and cost), and ethical concerns (plagiarism and student over-reliance). These findings highlight the need for training modules that not only enhance teachers' technical and pedagogical competence, but also provide institutional support and clear guidelines for the responsible use of AI in English language teaching.

4.3. Needs and Expectations

Most lecturers expressed a strong need for training that directly addresses their day-to-day teaching challenges and provides concrete solutions. Ten out of twelve highlighted that the most valuable content would focus on practical applications of AI for the four skills, listening, speaking, reading, and writing, as well as formative feedback. Writing and speaking were mentioned most frequently, but several lec-

turers emphasized that reading and listening tools are comparatively limited and require greater attention. Others also hoped that AI could be effectively embedded in classroom activities rather than used only as an external supplement.

"I hope the training can teach us step by step how to use AI for writing feedback and for designing speaking tasks." (P2)

"Tools for speaking and writing are quite common, but I rarely find useful ones for reading instruction." (P3)

Training formats were another key concern. Eight out of twelve lecturers preferred interactive and hands-on approaches, such as workshops or group-based tasks, where they could practice AI use directly. While online modules were acceptable, many stressed the importance of opportunities for real-time interaction and practice.

"Workshops where I can actually use the tools are more effective than just listening to theory." (P3)

Resource materials were expected to be concrete, targeted, and easily transferable. Seven out of twelve lecturers emphasized the value of step-by-step guidelines, sample lesson plans, and classroom demonstrations that could be directly adapted to their own contexts. Some specifically noted the need for training on how to quickly and effectively generate high-quality, course-appropriate PowerPoint presentations using AI tools.

"If there are sample lessons and demonstration videos, it would be much easier for me to adapt them to my classes." (P8)

"It would be very useful if we could learn to use AI to make a high-quality PPT quickly and according to requirements." (P10)

In addition, lecturers hoped that AI could be applied to provide personalized, classroom-based feedback and interaction for students, making the learning process more individualized and engaging. A few also suggested that the training itself should help to increase teachers' acceptance of AI and reduce the sense of difficulty or intimidation they currently associate with new technologies.

Document analysis supported lecturers' emphasis on the need for practical, context-driven AI training. The Opinions on Promoting the Spirit of Educators and Building a High-Quality Professional Teaching Force (2024)[53] call for continuous professional learning rooted in real teaching contexts and emphasize the cultivation of teachers' innovation

and reflective capacities. At the institutional level, Henan Normal University's Notice on the AI-Empowered Classroom Training Workshop (2025)[54] exemplifies localized implementation, offering hands-on practice in AI-integrated teaching design. Similarly, Henan University's Notice on the 2025 Blended Teaching Development Program for Young Lecturers[55] highlights "learning-by-doing" and peer exchange. However, while these initiatives mark progress toward more experiential professional development, they remain limited in scope and lack sustained support mechanisms tailored to EFL pedagogy. This underscores the lecturers' expressed need for discipline-specific, application-oriented, and theoretically grounded training modules.

To summarize, lecturers' expectations point clearly to the five dimensions of training module design: objectives (to build AI integration competence), content (covering listening, speaking, reading, writing, and feedback, with special attention to reading and listening), methods (hands-on, task-based practice), materials (ready-to-use guides, samples, and demonstrations), and evaluation/support (peer feedback, follow-up exchanges, and strategies to improve teachers' acceptance of AI). These findings highlight that the module should be highly practical, context-sensitive, and designed to lower barriers for adoption while directly enhancing classroom teaching effectiveness.

4.4. Attitudes, Willingness, and Suggestions for Future Development

Most lecturers expressed a generally positive attitude toward the use of AI in English teaching, acknowledging its potential to improve efficiency and reduce workload. Several lecturers highlighted that AI could save time in lesson preparation and provide convenient tools to support classroom tasks.

"AI makes some things much faster and easier, like preparing teaching materials." (P5)

At the same time, many participants voiced caution. Eight out of twelve worried that students' increasing reliance on AI might undermine their independent thinking and authentic language output. A few also pointed out that teachers themselves might over-rely on AI, which could gradually reduce creativity and critical thinking in both teaching and learning.

"I worry that students may rely too much on AI and

lose their own critical thinking." (P6)

"If teachers depend on AI too much, our classes will become less creative." (P11)

In terms of training design, lecturers emphasized that the module should focus not merely on introducing AI tools and their functions, but on showing how to align AI use with course objectives. They suggested that training should provide specific classroom cases and live demonstrations, enabling teachers to directly apply what they learn to practice.

"The training should clearly explain how to link AI tools with our course objectives, not just list their functions." (P4)

Teachers also stressed the importance of designing the module around their teaching pain points and the key challenges of AI integration, rather than offering "superficial or flashy" content. They valued concrete, functional training that could build fluency and confidence in AI use, ensuring that classroom time would not be wasted on technical problems.

"We don't need something decorative. What matters is learning the actual functions and using them smoothly in class." (P5)

Document analysis further reinforced these findings. National directives such as The Opinions on Promoting the Spirit of Educators (2024)[53] emphasize that technological innovation in education must be guided by professional ethics and teacher responsibility. At the institutional level, Zhengzhou University's Four-in-One Quality Assurance System (2025)[56] underscores reflective and evidence-based teaching as key indicators of quality. Similarly, the MOE Reply to Proposal No. 4475 (2021)[57] highlights the necessity of preventing students' overreliance on AI and ensuring teachers' active pedagogical guidance. These policy orientations resonate with lecturers' cautious optimism and call for AI training modules grounded in professionalism, ethical awareness, and pedagogical reflection.

In Summary, lecturers' attitudes toward AI were cautiously optimistic: they appreciated its efficiency and convenience but feared both students' and teachers' potential over-reliance. Their suggestions point to the need for a practical, theory-informed, and context-sensitive training module that emphasizes alignment with course objectives, provides concrete classroom cases and demonstrations, and directly addresses teachers' instructional challenges. **Table 3** in the end summarizes the key themes and sub-themes identified in the analysis, along with representative quotes and their frequencies, providing an overview of the lecturers' perspectives on AI-assisted teaching.

Table 3. Exemplar quotes for each major theme.

Theme	Sub-Theme	Frequency (n = 12)	Exemplar Quote
Current Use of AI	Frequent use	9	"I often use school-supported platforms such as Rain Classroom, U-Campus, and Learning Through for tasks like taking attendance, and I also use iTest for one-click essay grading." (p12)
	Low frequency	3	"I know Deepseek, Doubao, and often use them to write the lesson plan,but I have never really tried to use it in my teaching." (P2) "I mainly use Youdao in writing classes to help students translate, but I rarely apply AI in listening lessons." (P3)
Challenges and Barriers	Technical difficulties	8	"I am not very skilled at operating these AI tools, and sometimes learning to use them takes longer than just teaching by myself." (P7)
	Poor pedagogical fit	6	"AI feedback is quick, but it doesn't always align with our course objectives, such as fostering critical thinking." (P6)
	Lack of institutional support	9	"Our university only offered general AI training sessions divided into humanities and science groups, without any discipline-specific focus, so I have had to figure things out on my own." (P9)
Needs and Expectations	Training content	10	"I hope the training can show us exactly how to use AI for reading,writing,listening or speaking tasks, step by step." (P2)
	Training methods	8	"I prefer workshops where I can practice with AI tools, not just listen to lectures." (P4)
	Resources and materials	7	"If there are sample lesson plans or case studies, it will be easier for me to adapt them in my own class." (P5)

Table 3. *Cont.*

Theme	Sub-Theme	Frequency (n = 12)	Exemplar Quote
	Objective	7	"I hope this training will enable me to learn how to apply AI more systematically across different stages of classroom instruction." (P10)
	Assessment	3	"I believe that dividing lecturers into small groups to demonstrate simulated applications of AI in teaching practice, or encouraging them to share their teaching practices after the training, would be a more effective way to evaluate the training." (P3)
Attitudes, Willingness, and Suggestions for Future Development	Generally positive but cautious	9	"I believe AI can save time and make teaching more efficient,but I still don't fully trust its accuracy." (P4)
	Step-by-step and easy-to -follow module design	4	"The training module should be very clear and simple, because not all teachers are good with technology."(P5)
	Policy and ethical issues	6	"Universities should guide us on ethical and responsible use of AI." (P9)

4.5. Overall Summary of Needs Analysis

The needs analysis revealed that while university EFL lecturers have begun exploring AI tools and recognize their potential, their use remains fragmented and largely confined to peripheral tasks such as lesson preparation and administrative support. They face significant barriers, including insufficient discipline-specific training, difficulties aligning AI tools with teaching goals and student proficiency, limited AI literacy, and concerns about over-reliance and academic integrity. At the same time, lecturers expressed strong expectations for practical, hands-on training that demonstrates how to embed AI effectively into classroom strategies across the four language skills. They emphasized the importance of targeted objectives, concrete classroom cases, step-by-step resources, and theoretically grounded guidance. Taken together, these findings highlight the urgent need for a contextually relevant, pedagogically oriented training module that can equip lecturers to integrate AI purposefully and responsibly into their teaching practice. **Figure 1** in the end presents the thematic map, which visually illustrates the relationships between the major themes and sub-themes identified in the analysis.
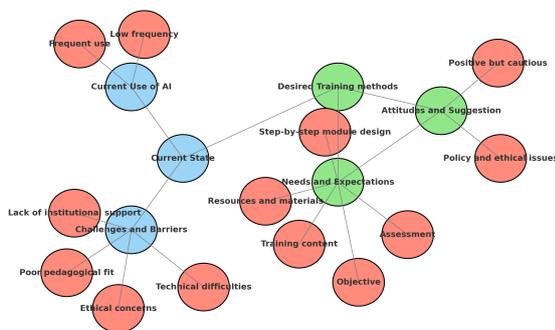

Figure 1. Thematic map.

5. Discussion

The objective of this study was to explore university EFL lecturers' needs and challenges regarding the integration of AI-assisted teaching strategies. The findings point to a clear discrepancy between lecturers' exploratory but fragmented use of AI tools and their strong aspiration for systematic, pedagogically meaningful integration. This gap reflects both structural constraints within higher education and lecturers' limited technological-pedagogical expertise. It underscores the urgency of discipline-specific professional development.

Consistent with previous studies[43], lecturers in this study reported that their use of AI remains largely peripheral. It is mostly confined to lesson preparation, translation, or administrative support, such as using translation software, generative tools, or automated grading platforms. However, this research adds new insight by showing that such fragmentation is closely linked to a lack of discipline-specific training opportunities in Chinese universities.Document analysis reinforced this interpretation, revealing that while national and provincial policies strongly promote AI-enabled education reform, institutional mechanisms for discipline-based implementation remain underdeveloped. While Moorhouse and Kohnke emphasized the importance of aligning AI with pedagogical goals[45], the lecturers in this study highlighted the absence of targeted workshops for English teaching. As a result, they had to rely on self-exploration without clear guidance. This divergence illustrates that contextual and institutional factors significantly shape how teachers appropriate AI in their classrooms.

The findings also extend theoretical perspectives on needs analysis. McKillip's Discrepancy Model[19] is useful in distinguishing the Current State—fragmented use and barriers such as technical misalignment, limited AI literacy, and ethical concerns—from the Desired State—practical, hands-on training with concrete classroom cases, step-by-step resources, and theoretically grounded guidance. This study therefore provides empirical support for applying the discrepancy model to technology integration in EFL contexts. The data also align with the Dick and Carey model of instructional design[36]. Lecturers' needs clearly mapped onto its five components: objectives, content, methods, materials, and evaluation. Moreover, the results highlight the critical role of Technological Pedagogical Knowledge (TPK) within the TPACK framework[37]. Lecturers demonstrated basic technological awareness (TK), but they struggled to embed AI into pedagogy. This underscores the need to strengthen TPK as the nexus of AI-assisted language teaching.

In practical terms, the study highlights the need for training modules that are highly contextualized, hands-on, and oriented toward immediate classroom application. Lecturers expressed preferences for workshops, sample lesson plans, and demonstrations. This suggests that effective training should not only showcase AI tools but also model their alignment with learning objectives and classroom realities. These findings echo Liu et al., who observed teachers' demand for practical resources[44]. At the policy level, the document analysis indicates that current initiatives—such as large-scale AI literacy training—lack pedagogical specificity and follow-up support, which limits their impact on actual teaching practice. For policymakers and institutional leaders, the results indicate that generic AI training is insufficient. Sustained and discipline-specific support is required to help EFL lecturers move from exploratory use to systematic pedagogical integration.

6. Conclusions

This study explored the needs of university EFL lecturers in Henan regarding AI-assisted teaching strategies. The findings show that while lecturers have begun to use AI, their practice is fragmented and often limited to supportive tasks. At the same time, they expressed a strong demand for training that is practical, discipline-specific, and linked to real classroom contexts.These findings also align with national and provincial education policies that advocate AI integration in teaching, yet they reveal a gap between policy ambitions and the realities of classroom implementation. These results underline the importance of moving beyond generic technology workshops and creating programs that directly respond to lecturers' teaching realities.

Drawing on McKillip's Discrepancy Model, the Dick and Carey instructional design model, and the TPACK framework, this study offers theoretical and empirical foundations for designing professional development modules that support coherent integration of AI in English language teaching.

However, this study has several limitations. The qualitative sample was relatively small, involving only 12 lecturers from four universities in Henan Province, and the data were collected solely through interviews and document analysis. Therefore, the findings should be interpreted as context-specific and exploratory, not generalizable to all settings. Future research could expand the sample across regions, combine qualitative and quantitative methods, and evaluate the effectiveness of training modules developed based on these identified needs.Despite these limitations, the study contributes to the growing literature on AI in education by documenting EFL lecturers' lived experiences and identifying concrete directions for enhancing AI-assisted pedagogical competence. It underscores the need for sustained institutional support and well-designed professional training to bridge the gap between technological possibilities and pedagogical implementation in higher education.The combined analysis of lecturers' voices and policy documents provides a holistic understanding of both institutional expectations and on-the-ground needs, offering practical guidance for the design of future AI training programs in higher education.

Author Contributions

Conceptualization, S.Y. and N.M.N.; methodology, S.Y.; software, S.Y.; validation, S.Y., N.M.N. and K.A.J.; formal analysis, S.Y.; investigation, S.Y.; resources, S.Y.; data curation, S.Y.; writing—original draft preparation, S.Y.; writing—review and editing, S.Y.; visualization, S.Y.; supervision, N.M.N. and K.A.J. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of HENAN POLYTECHNIC UNIVERSITY (protocol code 20250127003).

Informed Consent Statement

All participants provided informed consent before participating in the study. The anonymity and confidentiality of the participants were guaranteed, and participation was completely voluntary.

Data Availability Statement

Data will be made available on request.

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Conflicts of Interest

The authors declare no conflict of interest.

Appendix A

The Semi-structured interview guide

The aim of this interview is to gain a deeper understanding of university English lecturers' perspectives and experiences regarding the use of AI in teaching.

Before we begin, I would like to highlight that this conversation is designed to be open and respectful. There are no "right" or "wrong" responses, and your honest views are highly valued. You are encouraged to share your thoughts freely, even if they differ from others. Every viewpoint contributes meaningfully to this study.

Please rest assured that all information you provide will remain strictly confidential and will be used only for academic research purposes.

Thank you for taking the time to join and contribute to this interview.

Section 1: Background Information

1. How many years have you been teaching English at the university level?

2. Have you ever used artificial intelligence (AI) tools in your teaching or lesson preparation? If yes, which tools?

Section 2: Current State of AI Use in Teaching

3. In your English teaching, how do you ever used AI tools to support students' learning?

4. Can you share a specific example of when you used, or tried to use, an AI tool in your teaching?

Section 3: Challenges and Barriers

5. What main difficulties have you experienced, or do you expect, when trying to use AI tools in your teaching?

Section 4: Needs and Expectations

6. If there were a training module to help you use AI in your English teaching, what would you most like to learn or be able to do after the training? (objectives)

7. What topics or skills should the training cover to be most helpful for your teaching? (content)

8. What training format would be most effective for you?

9. What resources or materials would be most useful in such training? (methods)

10. After the training, how would you prefer your learning or progress to be evaluated or supported?

Section 5: Attitudes, Willingness and future outlook

11. What is your overall attitude toward using AI in English teaching?

12. Would you like to further develop your skills in using AI for teaching? Why or why not?

Appendix B

Table A1. National-Level Policy Documents.

No.	Document Title	Issuing Authority	Core Policy Focus and Source	Implications for AI-Assisted EFL Teaching
1	Outline for Building an Educational Power (2024–2035)	The Central Committee of the CPC & The State Council 2025-01-19	Sets a national vision for digitalization and AI in education. https://www.gov.cn/yaowen/liebiao/202501/content_6999917.htm	Provides the top-level strategic framework for AI-driven teacher training.
2	Teachers' Digital Literacy (Industry Standard)	Ministry of Education 2022-11-30	Defines teachers' digital and AI competency standards. http://www.moe.gov.cn/srcsite/A16/s3342/202302/t20230214_1044634.html	Serves as the competency benchmark for AI-integrated teacher training.
3	Opinions on Accelerating Educational Digitalization	Nine Ministries including MOE 2025-04-11	Promotes the "Digital Education China Initiative." http://www.moe.gov.cn/srcsite/A01/s7048/202504/t20250416_1187476.html	Guides teacher professional development through AI-supported innovation.
4	Notice on Implementing the Digital-Empowered Teacher Development Action	General Office of MOE 2025-07-02	Launches the digital empowerment program for teacher growth. http://www.moe.gov.cn/srcsite/A10/s7034/202507/t20250704_1196586.html	Encourages the use of AI for personalized instruction and reflection.
5	Notice on Exploring AI Education Paths for Primary and Secondary Schools	General Office of MOE 2024-12-02	Promotes AI curriculum and teacher capacity-building. https://www.moe.gov.cn/jyb_xwfb/gzdt_gzdt/s5987/202412/t20241202_1165500.html	Provides a transferable framework for AI teacher education in higher education.
6	Notice on the Second Batch of AI-Empowered Teacher Pilot Projects	Ministry of Education 2021-09-07	Expands AI pilot projects in teacher training nationwide. http://www.moe.gov.cn/srcsite/A10/s7034/202109/t20210915_563278.html	Offers best-practice references for AI competence in university EFL teaching.
7	Guidelines on Strengthening the "Three Classrooms" Application	Ministry of Education 2020-03-03	Promotes synchronous, expert, and online classrooms. http://www.moe.gov.cn/srcsite/A16/s3342/202003/t20200316_431659.html	Lays the groundwork for blended and AI-supported teaching.
8	Guidelines on Network Learning Space Construction and Application	Ministry of Education 2018-12-12	Builds networked learning environments for flexible teaching. http://www.moe.gov.cn/srcsite/A16/s3342/201901/t20190124_367996.html	Enhances teachers' readiness for AI-integrated teaching modes.
9	Reply to Proposal No. 4475 (Education No. 482)	Ministry of Education 2021-10-22	Addresses teacher digital-skill development and AI literacy. http://www.moe.gov.cn/jyb_xxgk/xxgk_jyta/jyta_jijiaosi/202204/t20220411_615578.html	Reinforces policy continuity for teacher AI capacity-building.
10	Opinions on Promoting the Spirit of Educators	CPC Central Committee & State Council 2024-08-06	Promotes professionalism, innovation, and moral values among teachers. https://www.gov.cn/gongbao/2024/issue_11566/202409/content_6973187.html	Emphasizes teachers' adaptability and innovative application of AI.

Table A2. Provincial-Level Policy Documents (Henan Province).

No.	Document Title	Issuing Authority	Core Policy Focus and Source	Implications for AI-Assisted EFL Teaching
1	Henan "AI + Action Plan" (2024–2026)	General Office of Henan Provincial Government 2024-10-29	Expands AI application across industries including education. https://www.henan.gov.cn/2024/10-29/3079408.html	Provides a strategic foundation for provincial AI education reform.
2	Henan "AI + Education" Three-Year Action Plan (2025–2027)	Henan Provincial Department of Education 2025-03-28	Strengthens teacher AI training and smart learning ecosystems. https://www.henan.gov.cn/2025/05-26/3162194.htm	Offers clear provincial guidance for AI-based teacher professional development.
3	Special Action Plan for Accelerating New-Type Educational Infrastructure (2023–2025)	Henan Provincial Department of Education 2023-10-26	Builds digital infrastructure and intelligent classrooms. http://m.jyt.henan.gov.cn/2024/09-24/3066324.html	Provides technological support for AI-assisted English teaching.
4	Notice on Comprehensive AI Application Training for University Teachers	Henan Provincial Department of Education Office 2025-06-04	Requires all faculty to complete AI competence training. http://m.jyt.henan.gov.cn/2025/06-05/3166192.html	Institutionalizes AI literacy as part of professional qualification.

Table A3. Institutional-Level Documents.

No.	Document Title	Issuing Authority	Core Policy Focus and Source	Implications for AI-Assisted EFL Teaching
1	Notice on Smart Course Construction and AI-Empowered Upgrading	Henan University 2025-08-29	Encourages AI-supported curriculum reform. https://kczx.henu.edu.cn/info/1003/1663.htm	Demonstrates local implementation of AI course design.
2	2025 Spring Training Program for Young Teachers from Central-Western Universities	Henan University 2025-02-13	Provides blended professional development for teachers. https://rsc.henu.edu.cn/info/1063/5098.htm	Enhances lecturers' AI-assisted blended-teaching practices.
3	Implementation Plan for College English Teaching Reform (Trial)	Henan Polytechnic University 2025-10-01	Introduces AI tools in English language courses. https://sfs.hpu.edu.cn/info/1058/7541.htm	Defines the pedagogical use of AI for assessment and instruction.
4	Zhengzhou University "Four-in-One" Quality Assurance System	Zhengzhou University 2025-05-13	Establishes data-based quality assurance for teaching. http://paper.jyb.cn/zgjyb/h5/html5/2025-05/13/content_144750_18514907.htm	Utilizes AI analytics to monitor and improve teaching effectiveness.
5	Notice on the "AI-Empowered University Classroom Teaching" Workshop	Henan Normal University 2025-08-21	Organizes AI-focused training sessions for faculty. https://www.htu.edu.cn/rsc/2025/0821/c7797a353459/page.htm	Provides a practical example of institutional AI capacity-building.

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