

AI-Empowered English Speaking Teaching and Learning: A Scoping Review of Chinese Core Journal Studies (2022–2026)

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Abstract. Despite rapid growth in research on generative AI in EFL speaking instruction, the thematic structure and evidence gaps of this body of research have not been systematically mapped. This scoping review follows PRISMA-ScR guidelines to map AI-empowered English speaking research in Chinese core journals indexed in CNKI from 2022 to March 2026. Two independent researchers screened the literature (Cohen's $\kappa = 0.85$), yielding 33 eligible studies. Findings show that the field has grown substantially since 2024, shifting from tool-oriented discussions to systemic analyses across five themes: pedagogical restructuring, learner agency, dynamic assessment, teacher AI literacy, and ethical governance. Yet proficiency-stratified analysis, longitudinal evidence, assessment fairness, and comparative research on domestic Chinese and global LLMs remain underdeveloped. By providing the first systematic mapping of this field, the review demonstrates how China's exam culture, in which high-stakes assessment pressure shapes AI integration in distinctive ways, interacts with AI+Education policy and the domestic LLM ecosystem to extend CALL and SLA scholarship beyond Western-centered settings. Priority should be given to longitudinal and proficiency-stratified designs, integrated teaching-learning-assessment cycles, and localized LLM governance.

Keywords: artificial intelligence; English language teaching; human-AI collaboration; learner agency; intelligent assessment; ethical governance.

1. Introduction

Artificial intelligence (AI) has transformed English as a Foreign Language (EFL) education, with oral instruction becoming one of the most visible domains of application. Its capacity for repeated interaction, instant feedback, and adaptive language support directly addresses long-standing constraints in large-class EFL speaking instruction, where learners often have limited opportunities for sustained oral practice and individualized feedback [1, 2]. Recent scholarship has therefore moved beyond tool-oriented discussions to examine how AI reshapes classroom interaction, learner agency, assessment practices, teacher roles, and ethical governance [3, 4, 5].

China offers a globally distinctive research site for AI-mediated oral English education. It has one of the largest EFL populations, an exam-oriented educational culture, top-down national AI+Education policy drivers, and a rapidly developing domestic LLM ecosystem, all of which shape AI integration in oral teaching in ways not fully captured by Western-centered computer-assisted language learning (CALL) research [6, 7].

Systematically reviewing high-quality Chinese studies is important because it brings into view how AI is being integrated into a large EFL ecosystem shaped by exam-oriented pressure, policy-driven digital reform, and domestic AI platforms. Such evidence can broaden current understandings of AI-mediated language education beyond conventional Western research settings, while also showing how Chinese scholarship links AI use to instructional efficiency, human-AI collaboration, cultural mediation, and educational values. Drawing on 33 studies from Chinese core journals, this article focuses on AI-empowered English speaking teaching and learning and includes closely related studies on assessment reform, teacher development, ethical governance, and adjacent instructional contexts. Accordingly, this review addresses three research questions. First, what are the publication, methodological, and thematic characteristics of Chinese core journal research on AI-empowered

English speaking teaching from 2022 to March 2026? Second, what core thematic pillars have emerged in this research field? Third, what theoretical, pedagogical, and governance gaps remain when Chinese scholarship is situated within broader CALL and SLA research?

By providing the first systematic mapping of AI-empowered oral English education in Chinese core journals, this review extends global CALL scholarship in three ways. First, it makes visible how a large-scale, exam-driven EFL system integrates AI under top-down policy pressure, a configuration underrepresented in Western-centered research. Second, it identifies the shift from tool adoption to pedagogical ecology as the field's defining trajectory. Third, it pinpoints proficiency-stratified evidence and localized LLM governance as critical gaps requiring priority attention.

2. Methodology

This study follows the PRISMA-ScR guidelines to conduct a scoping review of AI-empowered English speaking teaching and learning in Chinese core journals. CNKI was searched using subject terms including "artificial intelligence," "generative artificial intelligence," "large language model," "English speaking teaching," "English teaching," "foreign language education," and "intelligent assessment," with synonymous expansion. The search covered studies published from 2022 to March 2026 and was limited to core journal articles indexed as PKU Core, CSSCI, or AMI. Dissertations, conference papers, newspaper articles, non-core journal articles, educational technology studies unrelated to TESOL, and TESOL studies unrelated to AI or LLMs were excluded. Because oral instruction is closely connected with assessment, teacher development, human-AI collaboration, and ethical governance, closely related English teaching studies were retained only when they directly explained mechanisms relevant to oral English education. The initial search yielded 169 articles, and the final sample included 33 studies, as shown in Fig. 1. Two independent researchers with backgrounds in applied linguistics and educational technology completed the screening and data extraction. Inter-rater agreement, calculated using Cohen's kappa, reached $\kappa = 0.85$, indicating excellent consistency. Disagreements were resolved through consensus discussion.

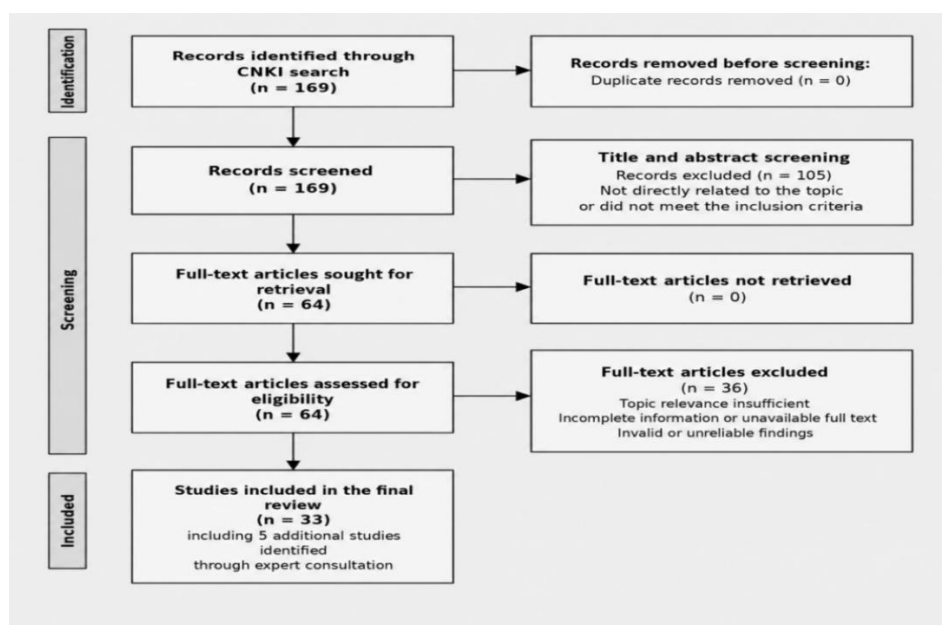


Fig. 1 Literature Identification and Screening Process

3. Descriptive Findings

The publication distribution shows a marked increase in research output, with 85% of the selected studies published between 2024 and March 2026. This indicates that the emergence of generative AI and LLM-based tools has rapidly intensified scholarly attention to AI-mediated English speaking education.

The methodological distribution suggests that the field is moving toward empirical validation but remains at an early stage of evidence-building. Empirical studies account for 36.4% of the sample, while "theoretical or commentary" and teaching design studies together account for 45.4%, indicating that conceptual exploration and pedagogical design still occupy a substantial proportion of the field.

The thematic distribution shows that high-frequency themes center on technological implementation, human-AI interaction, and pedagogical restructuring, while assessment fairness, ethical governance, cultural mediation, English for Specific Purposes (ESP), and postgraduate training remain emerging but underdeveloped areas. These descriptive patterns provide the basis for the thematic synthesis in the next section.

4. Thematic Findings

The sampled literature is synthesized through two mutually reinforcing analytical lenses. The Pedagogical-Interactional Lens examines how AI enters classroom interaction and learner development, with attention to scaffolding, meaning negotiation, feedback uptake, learner agency, and speaking development. The Systemic-Governance Lens examines how AI reshapes educational infrastructure, including diagnostic assessment, teacher AI literacy, disciplinary reconstruction, ethical risk, and algorithmic governance. In the Chinese EFL context, this lens is especially important because AI integration is shaped by both high-stakes English examinations and the rapid expansion of domestic AI ecosystems. Guided by these two lenses, the review organizes the sampled literature into five thematic pillars, which are later synthesized into a multi-level analytical framework in the Discussion.

4.1. Pedagogical Restructuring and Multimodal Interaction

Consistent with sociocultural theory, the reviewed studies frame AI not as an external add-on but as a mediational resource that restructures classroom interaction. AI-supported platforms extend input-feedback-practice cycles, while teachers increasingly shift from knowledge transmitters to task designers and process regulators [1, 2, 8, 9]. From an activity-theoretical perspective, AI changes the distribution of roles among learners, teachers, tools, and assessment practices, thereby reorganizing the instructional activity system [10, 11].

Multimodal and translanguaging-oriented studies further show that learners use AI to coordinate text, voice, images, first-language resources, and target-language production in meaning-making processes [12, 13, 14]. However, this line of research remains underdeveloped in speaking-specific settings. Future work should examine whether multimodal AI support improves oral fluency, interactional competence, and intercultural expression, rather than treating multimodality only as a general classroom affordance.

4.2. Learner Agency and Self-Regulated Human-AI Collaboration

The second theme concerns learner agency in human-AI collaboration. The reviewed studies suggest that AI feedback supports speaking development only when learners actively interpret, evaluate, and transform feedback into revised output. Rather than functioning as simple error correction, AI-mediated interaction can create opportunities for meaning negotiation, noticing, and modified output [15, 16, 17, 18, 19, 20]. In this sense, AI-supported speaking practice is pedagogically meaningful when it activates an interaction-noticing-output cycle.

Several empirical studies also suggest that AI may reduce participation anxiety and support learner enjoyment by providing repeated practice opportunities and a relatively non-judgmental interactional environment [21, 22, 23]. However, these benefits are conditional. When learners treat AI as an answer supplier, human-AI interaction may become cognitive outsourcing, weakening independent judgment, self-regulation, and originality [12]. Only two studies explicitly conduct proficiency-stratified analysis [24, 25], while others treat proficiency as a background variable, a grouping

condition, or a limitation [9, 12, 22, 26, 27]. This indicates that future research should treat proficiency not merely as a control variable but as a central explanatory dimension.

4.3. Dynamic Assessment and Teaching-Learning-Assessment Integration

The third theme concerns the transformation of assessment from summative scoring to dynamic diagnosis and sustained feedback. The sampled studies show that AI-supported assessment is increasingly used to monitor learning processes, identify speaking difficulties, generate formative feedback, and connect assessment results with subsequent instructional adjustment [3, 28, 29, 30]. This reflects a shift from assessment of learning toward assessment for learning, where feedback, task redesign, and learner uptake become part of the same pedagogical cycle [31].

AI also enables diagnostic evidence to be accumulated across repeated speaking tasks, making it possible to trace learner development over time [29, 30]. However, the validity of AI-generated feedback remains insufficiently examined. More research is needed on scoring fairness, interpretive transparency, speech recognition robustness, and the conditions under which immediate or delayed feedback better supports oral development [32, 33, 34, 35].

4.4. Teacher AI Literacy and Disciplinary Reorientation

The fourth theme concerns teacher AI literacy and disciplinary reorientation. The reviewed studies agree that AI can improve teaching only when teachers critically evaluate, adapt, and integrate AI outputs into pedagogically appropriate tasks. Teacher AI literacy therefore extends beyond technical operation; it includes instructional design, feedback interpretation, ethical judgment, and the capacity to decide when AI should support exploration and when it should be constrained by accuracy, task relevance, and assessment demands [4, 36]. This view is consistent with teacher knowledge frameworks such as pedagogical content knowledge and technological pedagogical content knowledge, which emphasize teachers' capacity to transform disciplinary, pedagogical, and technological resources into context-sensitive instructional decisions [37, 38, 39].

This issue is especially important in China's exam-oriented English education system. In contexts shaped by high-stakes examinations and computer-mediated English assessment, teachers must balance exploratory speaking practice with measurable linguistic accuracy and test-oriented performance. At the same time, some studies extend the discussion from technical adoption to teacher role transformation and humanistic responsibility in AI-mediated foreign language education [40, 41]. Related work on cultural inheritance further suggests that AI-mediated English teaching can also be connected with cultural representation and value transmission [27]. These low-frequency topics should not be treated as core evidence of speaking-pedagogy effects, but they help identify adjacent directions for future research on the humanistic and disciplinary dimensions of AI-mediated foreign language education.

4.5. Digital Ethics, Epistemic Risk, and Algorithmic Governance

The fifth theme concerns digital ethics, epistemic risk, and algorithmic governance. The reviewed studies show that privacy leakage, algorithmic bias, automated scoring fairness, academic integrity, prompt outsourcing, capability erosion, and unequal access are now central to AI-mediated language education [5, 30, 42]. These risks affect not only technology use but also instructional reliability, assessment validity, and the credibility of learning evidence.

A further concern is epistemic risk. Because generative AI can produce fluent but unstable or inaccurate content, learners may mistake linguistic fluency for knowledge reliability. Platform rules and training data may also privilege certain forms of knowledge while marginalizing others, making language education part of a broader struggle over representation, cultural visibility, and value mediation [5, 42, 43]. Although English education in China is increasingly shaped by Chinese LLMs and platforms, the sampled studies have not yet systematically compared Chinese LLMs with globally dominant models such as ChatGPT. This remains a key direction for localized AI governance.

5. Discussion

The preceding analysis suggests that AI-empowered oral English education is not a collection of separate applications, but a multi-level ecology linking learner cognition, classroom design, teacher expertise, disciplinary boundaries, and algorithmic governance. This section discusses the key findings in relation to global CALL and SLA scholarship, clarifies the theoretical and practical implications of the review, and acknowledges its limitations.

5.1. Overview of Key Findings

Three key findings emerge from the review. First, research on AI-empowered English speaking education in China has grown rapidly since 2024, reflecting the disruptive influence of generative AI and LLM-based tools on foreign language pedagogy. Second, the field has shifted from functional discussions of AI tools toward systemic analyses of pedagogical ecology, learner agency, dynamic assessment, teacher AI literacy, and ethical governance [1, 2, 3, 4, 5]. Third, although the field has developed five thematic pillars, major gaps remain in longitudinal evidence, proficiency-stratified analysis, assessment fairness, and localized governance of domestic AI ecosystems [12, 24, 25, 29, 30, 42]. These findings suggest that Chinese scholarship has moved beyond asking whether AI can be used in oral English teaching and has begun to examine how AI reorganizes the conditions of teaching, learning, assessment, and governance.

5.2. Dialogue with Global CALL and SLA Scholarship

The findings are broadly consistent with global CALL and SLA scholarship in three respects. First, both Chinese and international studies recognize AI potential to expand interactional opportunities, provide individualized feedback, and support repeated oral practice. This aligns with interaction-oriented SLA research, which emphasizes meaning negotiation, noticing, and modified output as mechanisms for language development [16, 17, 18, 19, 20]. Second, both research traditions increasingly understand AI not as a neutral tool but as a mediational resource that shapes learner agency, feedback uptake, and classroom participation [10, 12, 15]. Third, both fields have begun to foreground ethical concerns, including privacy, bias, dependence, academic integrity, and the reliability of AI-generated evidence [5, 30, 42].

However, the reviewed Chinese core journal studies also show distinctive characteristics. One important feature is the strong influence of top-down policy drivers. National AI+Education initiatives and the expansion of domestic platforms have made AI integration not only a classroom-level innovation but also part of broader educational modernization [7]. Second, China's exam-oriented educational culture gives AI speaking research a distinctive assessment orientation. Compared with Western CALL studies that often foreground intercultural communication, identity construction, and autonomous learning, Chinese studies more frequently connect AI with oral test preparation, diagnostic assessment, classroom efficiency, and measurable improvement in speaking performance [3, 28, 29, 30]. Third, the rise of Chinese LLMs creates a research ecology different from ChatGPT-centered international scholarship. Chinese studies must therefore consider not only language accuracy and feedback quality but also cultural filtering, value-sensitive moderation, and local knowledge representation. Fourth, the reviewed studies tend to emphasize classroom-scale implementation and teacher-mediated orchestration, whereas Western research more often highlights individualized self-access learning. This difference reflects the institutional realities of large-class EFL education and collective classroom organization in China [8, 9, 36].

At the same time, the reviewed Chinese core journal studies remain less developed than global scholarship in several areas. Empirical studies remain relatively limited, and many are short-term, small-scale, or design-oriented rather than longitudinal and comparative. Proficiency-stratified analysis is especially underdeveloped, although AI feedback may affect lower-, intermediate-, and higher-proficiency learners differently [24, 25]. Assessment-related studies have increased, but fairness, transparency, validity, and interpretive boundaries of AI-generated speaking scores remain

insufficiently examined [28, 29, 30]. Finally, although ethical governance is increasingly discussed, most studies remain at the level of general risk identification rather than offering operational models for classroom governance, institutional accountability, or comparative evaluation of domestic Chinese and global LLMs [5, 42, 43]. In addition, studies on AI-assisted mobile learning and personalized speaking learning suggest that learner uptake depends not only on technological availability, but also on behavioral intention, task design, and guided opportunities for reflective engagement [44, 45].

5.3. Theoretical Contributions

This review makes three theoretical contributions. First, it provides a systematic mapping of AI-empowered oral English education in a non-Western EFL context, thereby extending the geographical and cultural boundaries of global CALL scholarship. Existing AI-in-language-education research has often been shaped by Western institutional assumptions, including smaller classes, stronger traditions of learner autonomy, and greater emphasis on intercultural identity. By contrast, the Chinese case shows how AI-mediated speaking education develops under large-scale EFL participation, exam pressure, centralized policy support, and domestic platform ecosystems [6, 7]. This helps correct the Western-centered bias in current CALL discussion.

Second, the review extends sociocultural understandings of AI mediation. In the sampled studies, AI does not simply provide feedback; it reorganizes the relationships among learners, teachers, tasks, assessment evidence, and institutional expectations [1, 3, 8, 10, 11]. However, the review also shows that mediation has boundaries. If AI use becomes cognitive outsourcing, learners may lose opportunities to develop independent reasoning, deep textual reading, logical organization, and sustained academic expression [12, 22, 23]. Therefore, AI-supported oral English education should not be understood as unlimited technological assistance. It requires deliberate human-only learning activities in which learners complete core intellectual tasks without AI assistance, similar to composing without spell-check in writing pedagogy. This is especially important in advanced foreign language education and postgraduate training, where academic thinking, argumentative structure, and disciplinary judgment must remain human-led [46].

Third, the review develops a multi-level analytical framework for AI-empowered oral English education. The field can be understood across four connected levels: learner cognition and agency [12], classroom interaction and task design [1], teacher mediation and assessment orchestration [3], and algorithmic governance and knowledge representation [5]. This framework contributes to CALL scholarship by explaining how AI-mediated speaking education links micro-level learning processes with meso-level pedagogical organization and macro-level governance conditions. It therefore provides a theoretically grounded structure for comparing different AI-supported oral teaching models without reducing them to isolated tool functions.

5.4. Practical Implications

The findings also have practical implications for four groups of stakeholders. For educational policymakers, AI-supported oral English education requires stronger top-level design. Policy should not only promote technological adoption but also address regional inequality, teacher preparation, data protection, assessment fairness, and localized ethical standards. In large EFL systems, unequal access to AI tools may reproduce existing educational disparities unless infrastructure and governance mechanisms are built into implementation plans [7, 30, 42].

For teacher educators, the findings suggest that foreign language teacher education should reconstruct AI literacy as a multidimensional competence. Teachers need more than operational skills. They need the ability to design AI-supported speaking tasks, evaluate AI feedback critically, identify hallucinated or biased outputs, protect learner data, and decide when AI should be used and when human-only training is pedagogically necessary [4, 36]. Teacher AI literacy should therefore include technical, pedagogical, ethical, and knowledge-governance dimensions.

For educational technology developers, the review suggests the need to improve the oral feedback capacity of Chinese LLMs. AI speaking tools designed for Chinese EFL learners should not only support pronunciation, fluency, vocabulary, and grammar, but also address exam-oriented needs, intercultural communication, Chinese cultural expression in English, and differentiated feedback across proficiency levels [24, 25, 28, 29, 45]. Comparative evaluation of domestic and global models is especially important because training data, moderation rules, and feedback styles may shape what learners are encouraged to say, how errors are interpreted, and how cultural knowledge is represented.

For classroom practitioners, AI should be used to support, rather than replace, pedagogically guided speaking practice. Teachers should design tasks that require learners to interpret feedback, justify revisions, compare alternative expressions, and reflect on the limits of AI-generated suggestions [12, 29, 36]. In this sense, AI-supported oral English teaching should combine repeated practice and formative feedback with human-guided opportunities for spontaneous communication, critical thinking, intercultural discussion, and independent academic expression. At the program level, low-frequency studies on cultural representation and postgraduate foreign language education should be treated as emerging practical directions rather than established theoretical conclusions [27, 46]. Future curriculum design may explore whether AI-supported oral tasks can connect speaking practice with intercultural interpretation and disciplinary communication, but such expansion requires further speaking-specific empirical evidence.

5.5. Limitations of This Review

This review has several limitations. First, it included only Chinese core journal articles indexed in CNKI. Dissertations, conference papers, non-core journals, and English-language international publications were excluded, which means that some relevant studies may have been omitted. Second, the search covered publications only up to March 2026 and therefore cannot represent the full research output of 2026. Third, as a scoping review, this study mapped research characteristics, themes, and gaps but did not conduct a meta-analysis. It therefore cannot estimate the overall effect size of AI-supported speaking instruction. Fourth, although the review identifies the need to compare domestic Chinese and global LLMs, the sampled literature does not yet provide sufficient empirical evidence for direct model-level comparison. These limitations point to the need for broader multilingual databases, longitudinal designs, and quantitative synthesis in future research.

6. Conclusion

This scoping review examined 33 Chinese core journal studies on AI-empowered English speaking teaching and learning from 2022 to March 2026. The findings show that the field has expanded rapidly since the rise of generative AI and has moved from tool-oriented application toward a broader concern with pedagogical ecology, learner agency, dynamic assessment, teacher AI literacy, and algorithmic governance. The review also shows that this body of research is shaped by a distinctive combination of large-scale EFL learning, exam-oriented education, national AI+Education policy, and domestic LLM ecosystems.

The study contributes to CALL and SLA research in three main ways. First, it maps the major thematic structure of AI-empowered oral English education in Chinese core journal research. Second, it demonstrates how a non-Western EFL context can extend global understandings of AI-mediated language education by foregrounding policy drivers, assessment pressure, classroom implementation, and localized model governance. Third, it develops a multi-level analytical framework linking learner agency, classroom design, teacher mediation, and algorithmic governance.

As generative AI redraws the boundaries of what machines can do with language, the more urgent question for EFL educators is not simply how to integrate AI, but how to preserve the distinctly human capacities that AI cannot replicate, including spontaneous creativity, intercultural empathy, and critical judgment. Priority should therefore be given to three directions: longitudinal and proficiency-stratified studies of AI feedback effects; integrated investigations of teaching-learning-

assessment cycles; and comparative research on domestic Chinese and global LLMs in oral English instruction. These directions are necessary for moving AI-empowered speaking education from technological application toward theoretically grounded, pedagogically responsible, and locally governable innovation.

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