

International Journal of Learning, Teaching and Educational Research
 Vol. 25, No. 9, pp. 51–76, September 2026
<https://doi.org/10.26803/ijlter.25.9.3>
 Received Jun 02, 2026; Revised Aug 18, 2026; Accepted Aug 20, 2026

English Teacher Roles and Professional Challenges in AI-Enhanced Education: A Systematic Review, 2021–2025

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Abstract. The rapid development of artificial intelligence (AI) in education has significantly affected the role and practice of English teachers. This study conducts a systematic literature review on empirical studies about English teaching using AI from January 2021 to June 2025, analyzes the role transformation of English teachers in the integration of AI and the problems they encounter, and discusses the relationship between them. Based on PRISMA 2020 guidelines, Web of Science, Scopus, and ERIC were searched, resulting in 50 relevant studies for analysis. This study confirmed the organization, coding, and classification of the different types of AI tools used in English language teaching and learning, such as assessment and adaptive learning, writing and speaking enhancement, reading comprehension support, integrated language applications, and listening assistance. Moreover, it found that English teachers played various roles in the environment of AI English teaching, such as professional development and service, teaching, organization and coordination, evaluation, management and supervision, and innovation and exploration. Inevitably, English teachers faced a number of challenges while assuming these positions, including teaching ability, supportive environment, technology application, and learning effectiveness. Ultimately, regarding AI integration, this study revealed the relationships between different teacher roles and the various challenges teachers face in AI-enhanced English teaching. The results outline the relationship between roles and challenges in English education with AI and offer implications for teacher professional development and educational practice using AI.

Keywords: artificial intelligence; teacher role transformation; professional challenges; English language education; systematic review

Citation :

Zhao, L., Yacob, N. S., & Yunus, M. (2026). English Teacher Roles and Professional Challenges in AI-Enhanced Education: A Systematic Review, 2021–2025. *International Journal of Learning, Teaching and Educational Research*, 25(9), 51–76. <https://doi.org/10.26803/ijlter.25.9.3>

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1. Introduction

The application of artificial intelligence (AI) in English language teaching is rapidly transforming pedagogical and learning paradigms, opening new avenues. Artificial intelligence is playing a pivotal role in reshaping pedagogical and learning paradigms and providing fresh avenues for improving learning experiences in English language teaching. In this regard, technologies like generative AI, natural language processing, intelligent tutoring systems, and automated assessment tools have become important components of modern English learning settings that can cater to personalized learning requirements and offer innovative pedagogical solutions (Kristiawan et al., 2024; Said et al., 2013). Previous studies have already proven that these technologies have great potential to enhance the effectiveness of instruction, such as improving students' learning motivation, increasing learning engagement (Wulandari & Purnamaningwulan, 2024), enhancing students' language skills, supporting personalized learning, and giving instant feedback (Al-khresheh, 2024; Halim et al., 2020; Mabuan, 2024; Mohamed, 2024; Yang, 2022).

While AI technologies offer many advantages for English teaching and learning, they also present a number of issues for traditional ways of teaching English. As English education is rapidly adapting to digitalization and intelligent technologies, inequalities in the distribution of English education resources are increasingly evident, and the functions of teachers are becoming ever more differentiated (Moorhouse & Kohnke, 2024). Moreover, numerous English educators find themselves lacking AI proficiency and competencies in AI-driven learning settings, causing them to experience some degree of job anxiety, adaptation issues, and role ambiguity (Alsalem, 2024; Erdem Coşgun, 2025; Parviz & Arthur, 2025). The lack of such technological adaptation could not only hinder the professional development and effectiveness of teachers but also have a negative impact on the overall quality of English learning and teaching (Abd Rahman et al., 2021; Abou Assali, 2025; Gayed, 2025; Yunus & Suliman, 2014).

In response to these challenges, numerous research projects have focused on the challenges faced by English teachers, role changes, and the utilization of technology in the AI era (Kim et al., 2022; Zawacki-Richter et al., 2019). For example, Zawacki-Richter et al. (2019) reported that the field of AI in education lacks a proper pedagogical theoretical background and pedagogical perspective and does not pay attention to the key role of teachers in the application of technology. Kim et al. (2022) discussed the collaborative model between teachers and conversational AI through the teacher roles in the scenario of AI-assisted language education, namely collaborative teaching, curriculum design, and student support.

Current studies, however, have not clarified the multifaceted roles of teachers in the integration of AI and the value of the integration of technology, have failed to effectively guide the integration of technology, and have not paid attention to the AI training needs of teachers (Chiu et al., 2023). Moreover, many studies have been dedicated simply to the technologies and the impact on English teaching, while overlooking the complex challenges faced by teachers in the process of role

transformation (Alhusaiyan, 2025; Krishnan et al., 2021). The lack of research has limited the ability to provide effective support to educators and understand, in a systematic way, the impact of AI on the role of the English teacher and their professional development pathways (Ng et al., 2023). Hence, it is suggested that a more complex integration of the various roles and challenges of English teachers in the context of AI in education is necessary to inform theory and practice for English teachers' professional development (Tan et al., 2025).

The purpose of this study is to review the relevant literature from 2021 to 2025 and systematically understand the role of English teachers in the context of AI education, the application of AI in English teaching, and the difficulties English teachers encounter in teaching, and to analyze the relationship between teacher role transformation and these difficulties. This period was chosen because the application of AI has developed rapidly during these years, especially following the emergence of ChatGPT, which has significantly impacted English teachers' roles, teaching methods, and interactions with students (Li et al., 2025; Tan et al., 2025). This study is significant because it systematically summarizes the relationship between teacher role transformation and the challenges of English teachers in the critical period of rapid development of AI and offers theoretical guidance and support for teachers' professional development and the further integration of AI into English teaching. This study specifically asks the following research questions:

- RQ1:** What is the publication, geographical, and educational-level characteristics of studies focusing on English teachers in AI-enhanced education?
- RQ2:** What types of AI tools are applied in English language teaching?
- RQ3:** What roles do English language teachers play in AI-enhanced educational environments?
- RQ4:** What professional challenges do English language teachers encounter when integrating AI into their teaching?
- RQ5:** How are the different roles of English teachers connected to the challenges they face?

2. Methods

2.1 Review Design and Search Strategy

This systematic review is conducted in accordance with the PRISMA 2020 reporting guidelines (Page et al., 2021) and was not prospectively registered. Searches were conducted on 27 June 2025 in the Web of Science Core Collection, Scopus, and the Education Resources Information Center (ERIC) using the default basic search interface of each database. The same Boolean search string was entered directly into each database, and no specific search fields were manually selected. The searches were limited to English-language articles published between January 2021 and 27 June 2025. Whether the retrieved articles reported empirical studies was assessed during title-and-abstract and full-text screening. The core Boolean search string was as follows:

("teacher*" OR "educator*" OR "instructor*") AND ("AI" OR "artificial intelligence" OR "machine learning" OR "chatbot*" OR "intelligent tutor*" OR "intelligent tutoring system*" OR "automated feedback" OR "automated writing evaluation" OR

"AWE" OR "GPT" OR "ChatGPT" OR "large language model*" OR "conversational AI" OR "generative AI" OR "generative artificial intelligence") AND ("English" OR "EFL" OR "ESL" OR "TESOL" OR "English language teaching" OR "English language learning" OR "second language" OR "foreign language").

2.2 Eligibility Criteria, Screening, and Data Extraction

Prior to reviewing studies for inclusion in this systematic review, five inclusion criteria were established. These were informed by previous systematic review studies (Lyu et al., 2025; Schott et al., 2020).

1. Thematic relevance: The included studies were required to focus on the application of AI technology in English language education, particularly exploring teachers' role transformation, functional performance, or challenges faced during AI integration.
2. Research participants: The studies included focused on English teachers, but studies involving other groups were also accepted if evidence was collected from multiple groups.
3. Study type: Only empirical studies with any methodological designs (qualitative, quantitative, and mixed methods) were included. Theoretical studies, conference abstracts, and review articles were excluded.
4. Publication timeframe: Only studies published between January 2021 and June 2025 were included. This timeframe was chosen because the emergence of language models like ChatGPT has profoundly changed teacher roles, teaching practices, and teacher-student relationships (Li et al., 2025; Tan et al., 2025).
5. Language: Only studies published in English were included to ensure consistency in study interpretation and coding and to minimize potential ambiguity introduced by translation.

After duplicates were removed, one researcher screened the titles, abstracts, and full texts against the eligibility criteria, while a second researcher reviewed the decisions. Disagreements were resolved through consensus, and reasons for full-text exclusion were recorded. Data was extracted using a standardized Excel form with predefined categories.

2.3 Quality Appraisal

To ensure that the included studies were valuable to this review, the quality of the included studies was assessed according to existing assessment criteria, including quality evaluation of research background, objectives, research design, reliability, and conclusions (Kmet et al., 2004). The QualSyst tool was employed to conduct the quality assessment of the included literature (Kmet et al., 2004). This tool uses a three-tier scoring system (see Table 1), with each applicable item scored as 2 (yes), 1 (partial), or 0 (no). The quality score was calculated as the total score divided by the highest possible score. Following the liberal cut-off discussed by Kmet et al. (2004), studies with a quality score below 0.55 were excluded. One researcher conducted the quality assessment, and a second researcher reviewed the scores; disagreements were resolved by consensus.

Table 1: Quality assessment criteria (Kmet et al., 2004)

Study design	Criteria
Quantitative	1. Question/objective sufficiently described?
	2. Is the study design evident and appropriate?
	3. Method of subject selection or source of information/input variables described and appropriate?
	4. Subject (and comparison group, if applicable) characteristics sufficiently described?
	5. If interventional and random allocation was possible, was it described?
	6. If interventional and blinding of investigators was possible, was it reported?
	7. If interventional and blinding of subjects was possible, was it reported?
	8. Outcome and exposure measure(s) well-defined and robust to measurement? Means of assessment reported?
	9. Is the sample size appropriate?
	10. Analytic methods described/justified and appropriate?
	11. Some estimate of variance is reported for the main results?
	12. Controlled for confounding?
	13. Results reported in sufficient detail?
	14. Conclusions supported by the results?
Qualitative	1. Question/objective sufficiently described?
	2. Study design evident and appropriate?
	3. Context for the study clear?
	4. Connection to a theoretical framework/wider body of knowledge?
	5. Sampling strategy described, relevant and justified?
	6. Data collection methods clearly described and systematic?
	7. Data analysis clearly described and systematic?
	8. Use of verification procedure(s) to establish credibility?
	9. Conclusions supported by the results?
	10. Reflexivity of the account?

In this systematic review, 5,306 literature records were retrieved in total (see Figure 1). After the removal of duplicates, 4,122 records progressed to the screening stage. Based on the predefined inclusion and exclusion criteria, 3,987 records were excluded during the title and abstract screening, leaving 135 records for full-text screening. At the full-text screening stage, 40 records were excluded for failing to meet quality assessment criteria, and another 45 records were excluded for insufficient relevance to this research topic. Ultimately, 50 studies were included in this systematic review.

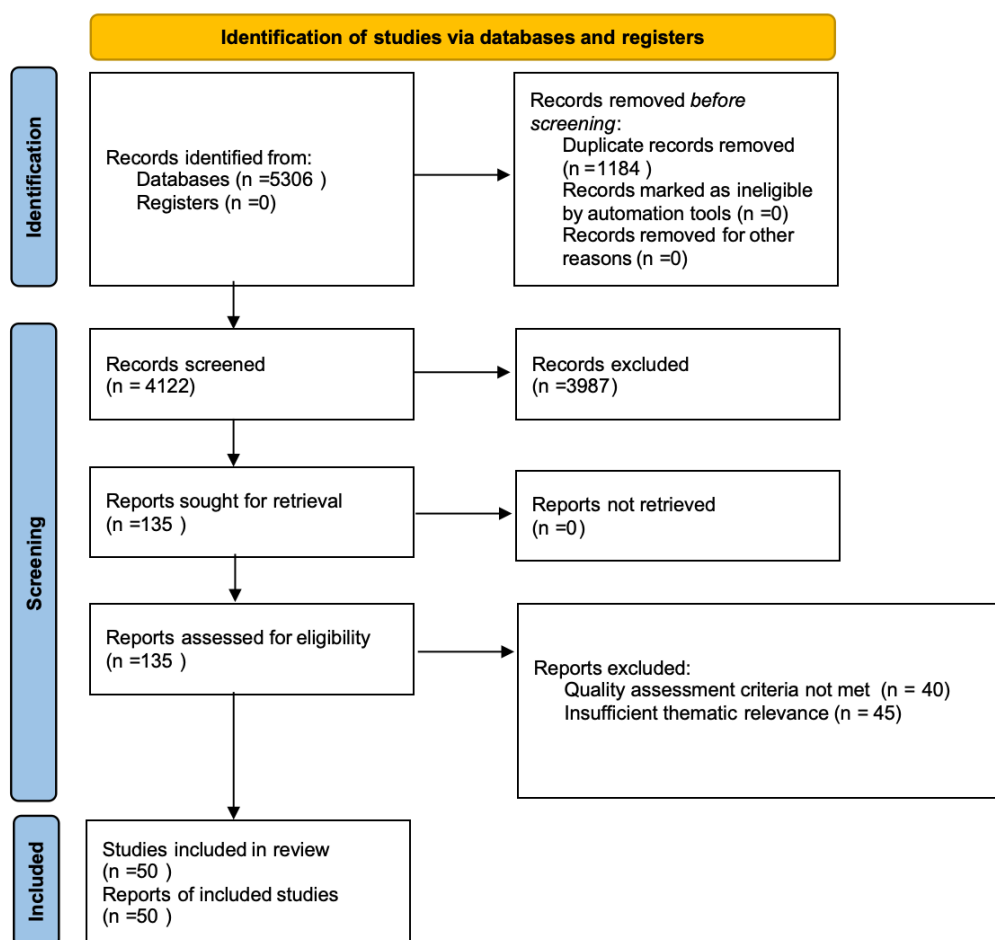


Figure 1: PRISMA 2020 flow diagram of the study selection process

2.4 Coding Process and Inter-coder Agreement

The coding process comprised three interconnected stages, utilizing an Excel spreadsheet to store, categorize, and analyze all data. Each included study served as the unit of coding. The categories were not mutually exclusive; therefore, one study could be coded into multiple AI-tool, teacher-role, or professional-challenge categories when relevant evidence was reported. AI-tool categories were distinguished according to the primary instructional function or language skill addressed by the tools as reported in the included studies. Each stage had a specific focus corresponding to the particular research questions of this study. The first coding stage (for RQ3) was used to identify the roles that English teachers play in AI-enhanced educational environments. This coding was based on the traditional teacher-role model established by Harmer (2007), which contains eight traditional teacher-role dimensions.

The development of AI technology and its effect on language learning have redefined and expanded these traditional roles, creating an updated framework of English teacher roles. Open coding techniques were used to establish new dimensions of roles when new roles were found that did not fit into the existing role categories. The first codes were then compared and combined into the final

teacher-role categories based on conceptual similarity. A study was scored in a role or challenge category when its findings explicitly mentioned the teacher role, responsibility, experience, or professional problem the study addressed. If a teacher role was a primary focus or major finding of a study, it was coded as strong relevance; ordinary relevance suggested that the role of a teacher appeared as a secondary or supporting finding of a study. Examples of the coding process are illustrated in Appendix 1.

To determine the difficulties of English teachers in the use of AI tools (for RQ4), the second coding stage was conducted. The coding was based on the teacher change framework, and the challenges identified were categorized into four dimensions: pedagogical competence challenges (personal domain), supportive environment challenges (external domain), concerns about teaching effectiveness (domain of consequence), and barriers to technological implementation (practical domain) (Clarke & Hollingsworth, 2002).

The last coding phase focused on creating links between various teacher roles and challenges (for RQ5). This process was based on previous research (Yuan & Chen, 2025). Firstly, a role-challenge relationship matrix was designed to systematically classify the relationships of different roles of teachers and their challenges. The matrix afforded a structured framework to the subsequent analysis, allowing the relationship between teacher roles and the challenges associated with them to be more clearly understood. The coded data were organized in Excel, and the role-challenge matrix was created to determine the relationships using qualitative cross-study comparison.

All included studies were coded by one researcher, whose coding was then discussed with a second researcher, who was also involved in the coding. The second researcher was consulted on the coding categories and on the decisions made on coding, and the issues were discussed and consensus was reached. A random sample of 15 studies (30% of the included studies) was also independently coded by both coders to further test the reliability of the coding. The resulting Cohen's kappa coefficient was 0.82, indicating good inter-coder agreement.

3. Results

3.1 Reviewed Studies and Their Characteristics

As shown in Figure 2, the studies included in this review cover 19 countries. China ($n = 10$, 20%), Indonesia ($n = 7$, 14%), and Saudi Arabia ($n = 5$, 10%) were the most frequently represented countries in the reviewed studies. South Korea, Spain, Germany, and the United States were each represented by one study, while four studies involved multiple countries.

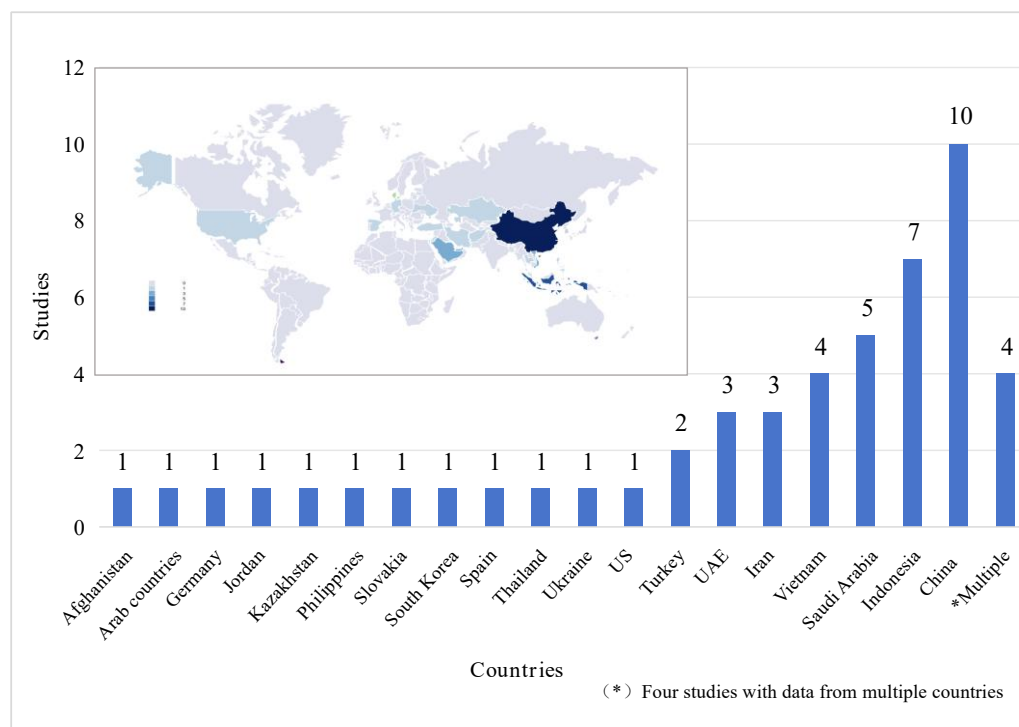


Figure 2: Geographical distribution of the countries investigated in the 50 studies

The studies included in this review cover different educational levels. Among them, research at the higher education level accounted for the largest proportion ($n = 37$, 74%), while studies at the secondary level ($n = 3$, 6%) and primary level ($n = 1$, 2%) were relatively few. In addition, nine studies (18%) encompassed multiple educational levels.

3.2 Types of AI Tools for English Education

As shown in Figure 3, this study identified six types of AI tools applied in English education and their distribution across the included studies. Because the categories were not mutually exclusive, one study could be counted in more than one AI-tool category. Representative applications such as Pigai for writing and assessment, FiF Speaking Practice and IELTS Smart Learning for speaking, and ChatGPT for writing, feedback, and conversational practice were used. The most common type of assessment and adaptive learning tools was identified in 50 studies.

These tools enable accurate management of instruction by tracking learners' progress, designing learning pathways based on personalization, and providing automated feedback in testing (An et al., 2023; Arefian et al., 2024). A total of 48 studies identified the development of writing skills or tools, such as the generation of content, checking grammar, and optimization of writing style (Du & Gao, 2022; Mohamed, 2024; Yang, 2022). In 41 studies, speaking expression training tools were identified and used in the fields mainly for pronunciation training and correction, AI dialogue simulation, and real-time feedback (Chan & Tang, 2025). Reading comprehension assistant tools were cited in 35 studies and offered adaptive reading support by means of difficulty grading of reading materials,

vocabulary and grammar explanations, and guiding students' reading strategies (Albadarneh et al., 2024; Zhou & Hou, 2025). In 24 studies, attention was given to integrated language application tools that build diversified learning environments, for example, task situation simulation and training of cross-cultural communication (Moorhouse & Kohnke, 2024; Parviz, 2024). Conversely, there was found to be less research on listening comprehension support tools; as such, 11 studies were found, which were mainly focused on improving listening comprehension skills through the creation of listening materials, speech-to-text support, and speech speed adjustment (An et al., 2023; Wulandari & Purnamaningwulan, 2024).

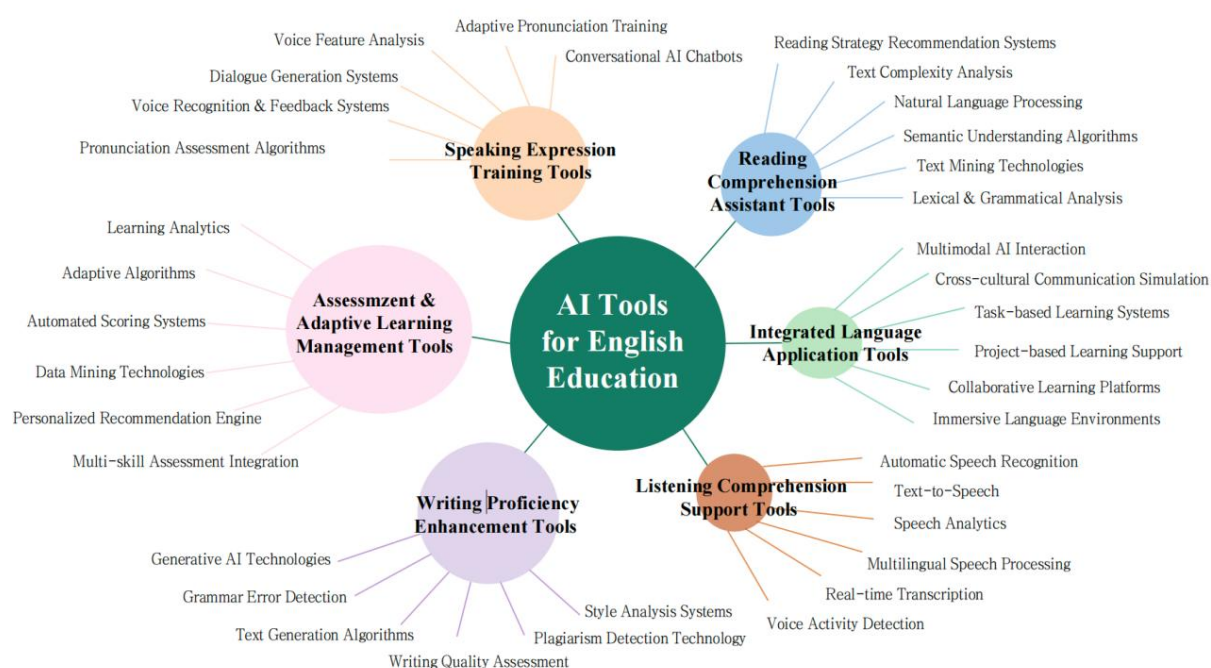


Figure 3: AI tools for English education

3.3 Teacher Roles in AI-Integrated English Education

As shown in Appendix 2, this study identified six dimensions of English teacher roles, which were further refined into 15 specific types. Among these, H1–H8 were derived from the traditional teacher-role model (Harmer, 2007), while N1–N7 were emerging types identified through open coding.

3.3.1 Professional support and development roles

A total of 46 studies focused on professional support and development roles. This refers to English teachers who, by enhancing both individual and collective AI literacy, become a key driving force in the development of the educational ecosystem. They undertake AI technology guide responsibilities, helping colleagues and students master AI tool application skills through training (Alsalem, 2024; Mena Octavio et al., 2024; Parviz, 2024). They also assist educational communities in adapting to technological changes, reducing technology anxiety, and providing psychological support (Moorhouse & Kohnke, 2024). Meanwhile, the roles focus on continuous professional development,

updating educational concepts, and practical abilities through training and academic exchanges and sharing application experiences within professional learning communities to promote AI-knowledge dissemination and collective wisdom formation (Alam et al., 2024; Arefian et al., 2024).

3.3.2 Instructional roles

A total of 44 studies focused on teaching roles. English teachers, as facilitators of instruction, are dedicated to cultivating students' AI literacy and guiding tool usage, ensuring the educational value of AI applications (Al-khresheh, 2024; Kohnke et al., 2023; Wulandari & Purnamaningwulan, 2024). This role creates personalized learning experiences by stimulating learning interest, understanding student needs based on data analysis, and providing customized English learning pathways (Wulandari & Purnamaningwulan, 2024; Yang, 2022). They also assume the role of collaborative facilitators in instruction, guiding teacher-student interactions and student-to-student collaboration (Parviz & Arthur, 2025), while serving as emotional support providers, maintaining humanistic care in AI-driven environments (Kohnke et al., 2023).

3.3.3 Organizational and coordination roles

Organizational and coordination roles were identified in 34 studies. This dimension refers to English teachers enhancing the coordination and effectiveness of AI teaching environments by optimizing instructional structures and rationally configuring human-machine relationships. Within this dimension, teachers serve as resource integrators, integrating AI tools with existing teaching resources to ensure that technology serves pedagogical goals (Al-khresheh, 2024; Alsalem, 2024; Mabuan, 2024); as coordination controllers, they balance AI-supported and human instruction in teaching activities (Mohamed, 2024) while, as activity organizers, they design innovative teaching formats such as AI-based project learning and collaborative learning (Moorhouse & Kohnke, 2024).

3.3.4 Assessment roles

Assessment roles were identified in 28 studies. This dimension emphasizes teachers' professional judgment when using AI tools for assessment. English teachers use AI tools for assignment grading and student assessment, achieving personalized and precise feedback while maintaining professional control and educational judgment over the assessment process (Liu & Xiao, 2025; Yang, 2022; Zhou & Hou, 2025). This dimension reflects human-AI collaborative assessment, where AI provides technical support for data analysis and preliminary evaluation, while teachers are responsible for professional interpretation of results, value judgments, and educational guidance. This collaborative model was described as supporting the use of assessment results to inform students' learning and development (Heydarnejad & Çakmak, 2024; Liu & Xiao, 2025).

3.3.5 Management and supervision roles

Fourteen studies investigated management and supervision positions. Management and supervision roles involve teachers' control and guidance over the use of AI technology whereby they must monitor and encourage students to be aware of and recognize the impact of AI so they can avoid becoming overly reliant on AI tools (Alsalem, 2024; Kohnke et al., 2024). Additionally, usage

standards and management mechanisms should be defined to ensure academic integrity and educational equity (Arefian et al., 2024; Moorhouse & Kohnke, 2024). Moreover, in this role, English teachers must also lead students to reflect on and evaluate the use of AI-assisted teaching, aiming to improve their autonomous learning ability (Arefian et al., 2024; Zhou & Hou, 2025).

3.3.6 Innovation and exploration roles

A total of 12 studies focused on innovation and exploration roles. This role emphasizes English teachers' commitment to exploring new application possibilities of AI technology in English teaching, demonstrating open-minded thinking and attempting innovative teaching methods (Kohnke et al., 2024; Mena Octavio et al., 2024). In addition, English teachers need to be proficient in employing AI for cutting-edge applications, such as providing timely feedback, designing intelligent and personalized teaching plans, and conducting simulated dialogue training (Kohnke et al., 2024; Moorhouse & Kohnke, 2024).

3.4 Professional Challenges Faced by English Teachers in AI-Integrated English Teaching

3.4.1 Pedagogical capacity challenges

Pedagogical capacity challenges were identified in 35 studies, making this the most frequently reported challenge category. Many English teachers hold skeptical attitudes toward new technology due to their reliance on traditional teaching methods, leading to resistance when accepting new approaches (Kohnke et al., 2023; Pokrivcakova, 2023; Su et al., 2025). Meanwhile, diverse teaching resources and technological requirements increase teachers' cognitive overload (Erdem Coşgun, 2025; Liu & Xiao, 2025; Moorhouse, 2024).

Additionally, professional crisis concerns make teachers worry about being replaced by new technology, thereby affecting their psychological health and attitudes toward technology application (Kohnke et al., 2024; Zulianti et al., 2025). Lack of knowledge about AI integration, insufficient training, and skill shortages also create application difficulties (Cong-Lem et al., 2024; Metwally & Bin-Hady, 2025), while difficulties in adapting to new technology leave teachers lacking opportunities for exploration and practice during their busy teaching schedules (Parviz & Arthur, 2025). Finally, cross-cultural sensitivity issues in multicultural educational environments exacerbate the challenges of AI tool usage (Hua & Le, 2024; Mustroph & Steinbock, 2024).

3.4.2 Support environment challenges

Support environment challenges were identified in 30 studies and were associated with teachers' adoption and use of AI technologies. First, lack of peer support represents a major obstacle, as research indicates that encouragement and resource sharing among colleagues are crucial for teachers' successful use of new technology (Abou Assali, 2025; An et al., 2023; Metwally & Bin-Hady, 2025). Second, AI applications require substantial hardware, software, and time support, but many educational institutions have insufficient resources to provide this (Liu & Xiao, 2025; Wardat & Akour, 2025). Meanwhile, teachers' concerns about data privacy and ethical risks, such as bias and injustice, also affect their acceptance of AI (Alharbi, 2024; Chung & Jeong, 2024; Mena Octavio et al., 2024). Additionally,

insufficient training and financial support hinder teachers' skill development (Liu & Xiao, 2025; Wardat & Akour, 2025), while worsening educational inequality leaves students from lower socioeconomic backgrounds lacking technological resources, further undermining teachers' confidence (Alharbi, 2024; Marzuki et al., 2023).

3.4.3 Technological implementation barriers

Technological implementation barriers were identified in 30 studies and were associated with concerns about teaching effectiveness and teachers' trust in AI. For example, in the field of pronunciation feedback, automatic speech recognition technology has not yet reached the technical standards for accurately analyzing and effectively providing feedback on pronunciation issues, limiting its application effectiveness in actual English teaching (Butler & Jiang, 2025; Chung & Jeong, 2024; Mena Octavio et al., 2024; Mohamed, 2024). Similarly, the limitations of automatic speech recognition technology also raise teacher concerns, as the technology performs inadequately in terms of accuracy and response speed, with background noise and student accents interfering with recognition accuracy, causing frustration among students (Mabuan, 2024; Wardat & Akour, 2025).

In addition, in gamified learning integration, teachers lack professional guidance when designing gamified experiences that are both engaging and educationally meaningful; if the design cannot effectively align with learning objectives, it may actually reduce learning effectiveness (Zulianti et al., 2025). Furthermore, teachers worry that excessive use of AI tools will affect the quality of teacher-student communication, reduce classroom interaction frequency, and thereby hinder the creation of a positive classroom atmosphere and the improvement of learning outcomes (Hua & Le, 2024; Urazbayeva et al., 2024).

3.4.4 Instructional efficacy concerns

Instructional efficacy concerns emerged in 29 studies and were related to teachers' confidence in using AI technologies. The first concern is the reliability of these technologies in providing accurate feedback on the actual abilities of students, on account of research that shows that AI algorithms might be incorrect (Mutammimah et al., 2024; Yilmaz Virlan & Tomak, 2025). Also, teachers afford considerable attention to plagiarism and ghost-writing as using AI can lead to such issues (Aljabr & Al-Ahdal, 2024; Zaiarna et al., 2024). On this basis, teachers also have concerns about the effects of technology overuse on student motivation, which could result in a decline in student interest in using technology for independent study (Liu & Xiao, 2025; Wardat & Akour, 2025). Lastly, teachers also have a concern about whether the AI technology can offer an effective learning experience; while these AI tools may offer personalized learning experiences, they may not necessarily meet the specific needs of all students (Chan & Tang, 2025; Kusuma et al., 2024).

3.5 Relationship Between Different Teacher Roles and Professional Challenges

Based on the qualitative cross-study comparison, this study found that English teachers assumed diverse roles in AI-enhanced education, with different roles associated with distinct professional challenges (see Figure 4).

3.5.1 Professional support and development roles: Advanced competence requirements

English teachers in professional support and development roles often face multiple challenges, including insufficient training, a lack of skills and resources, limited peer support, and issues with technology and identity recognition. For example, AI Technology Guides (N1) providing technical support are often affected by a lack of systematic training, insufficient technical skills, inadequate knowledge integration, scarce peer support, and tight funding (Parviz, 2024; Wardat & Akour, 2025). AI Adaptation Supporters (N4), while helping others adapt to new technology, also need to overcome difficulties in adaptation, cognitive overload, and insufficient peer support (Mena Octavio et al., 2024; Zhou & Hou, 2025).

Professional Developers (N5), when advancing professional learning in the AI era, often face resource scarcity and identity crises, needing to address challenges such as a lack of technical training, professional crisis feelings, and insufficient funding (Arefian et al., 2024). In disseminating new knowledge and introducing innovative practices, AI Knowledge Sharers (N6) encounter conflicts between old and new knowledge systems, as well as gaps in technical expertise, entrenched traditional teaching mindsets, and inadequate peer support resulting from imperfect professional community support mechanisms (Alharbi, 2024; Tran et al., 2024).

3.5.2 Instructional roles: Transformation dilemmas and identity reconstruction

English teachers undertaking instructional roles are prone to facing multiple challenges, including cognitive overload, technological and skill deficiencies, professional and ethical concerns, as well as classroom interaction, student motivation, and data privacy issues. As AI-Enhanced Facilitators (H1), they are required to master traditional teaching skills while integrating AI tools, therefore facing cognitive overload, insufficient technical knowledge, and concerns about classroom interaction and learning effectiveness (Alsalem, 2024; Du & Gao, 2022). Moreover, teachers who serve as AI Motivation Enhancers (H4) are afraid that this dependence on AI can reduce their professional value, force them to face professional crisis feelings, reduce student motivation, and cause academic integrity issues (Hastomo et al., 2024; Wulandari & Purnamaningwulan, 2024; Zulianti et al., 2025).

Additionally, AI Personalization Tutors (H6) rely on learning analytics and adaptive systems that involve vast amounts of student data, which can pose issues regarding privacy concerns, technical failures, and educational inequity (Gayed, 2025; Metwally & Bin-Hady, 2025). In traditional modes and AI environments, AI Environment Participants (H5) must balance traditional teaching inertia, skill deficiencies, and a deteriorating quality of interaction (Parviz & Arthur, 2025). Moreover, while Emotional Support Providers (N7) must continue to perform emotional functions in technology-mediated environments, they can be impacted by professional crisis feelings, cross-cultural sensitivity concerns, and communication barriers (Arefian et al., 2024; Kohnke et al., 2023; Slamet, 2024).

3.5.3 Organizational and coordination roles: Pressures of system integration

English teachers as resource integrators and activity coordinators are under system pressures in matters of resource allocation and management for AI technologies. English teachers play the role of Resource Integrators (H2) and encounter a range of problems, such as high utilization, inadequate resource funding, and limited technical skills for integration (Kohnke et al., 2023; Lukianenko & Kornieva, 2024; Yang, 2022). In addition, AI Coordination Controllers (H3) must take into account technical standards, ethical and legal constraints, and school policies, with a focus on ethical issues, data privacy, and challenges in adaptation (Mabuan, 2024; Mohamed, 2024). In addition, AI Activity Organizers (H7) often face gamification design challenges, technical failures, and low interaction quality when engaging with students in the planning and coordination of AI-supported courses and activities (Liu & Xiao, 2025; Mohamed, 2024; Zulianti et al., 2025).

3.5.4 Assessment roles: Human-AI collaboration conflicts

AI assessment systems have transformed the way English teachers assess students. Teachers as AI-enhanced Assessors (H8) will be required to partner with automated assessment tools and learning analytics systems to manage assessment. During this process, they face various problems, such as a reduction in the accuracy of assessments, academic honesty issues, low student motivation, professional crisis feelings, and ethical issues (Kohnke et al., 2024; Wulandari & Purnamaningwulan, 2024). The challenge of this position is to build on technology to enhance efficiency while maintaining fairness and professionalism in the assessment environment.

3.5.5 Management and supervision roles: Implementation dilemmas

Given their role's multi-faceted nature in terms of technology's operation, students' behavior, and instruction quality, AI Supervision Managers (N2) should pay attention not only to ethics and privacy but also to issues of educational inequality, a decrease in assessment accuracy, and academic integrity violations (Alsalem, 2024; Chung & Jeong, 2024; Le et al., 2025; Wardat & Akour, 2025). Teachers also need technology application skills, regulatory skills, and ethical judgment, such as knowing how to balance technological convenience and educational equity and avoiding the negative impacts of the use of AI technology in teaching while promoting the positive aspects.

3.5.6 Innovation and exploration roles: Impact of change resistance

AI Innovation Explorers (N3) take on the role of introducing and promoting new technologies in the field of education innovation. They must ensure that they can surmount skepticism of new technology, break down traditional notions of teaching and learning, and overcome problems like cognitive load and lack of funding (Kohnke et al., 2024; Mena Octavio et al., 2024). This position is not only a catalyst for technological innovation but also a force for educational transformation, encountering various challenges such as institutional, resource, and psychological barriers (An et al., 2023; Gayed, 2025).

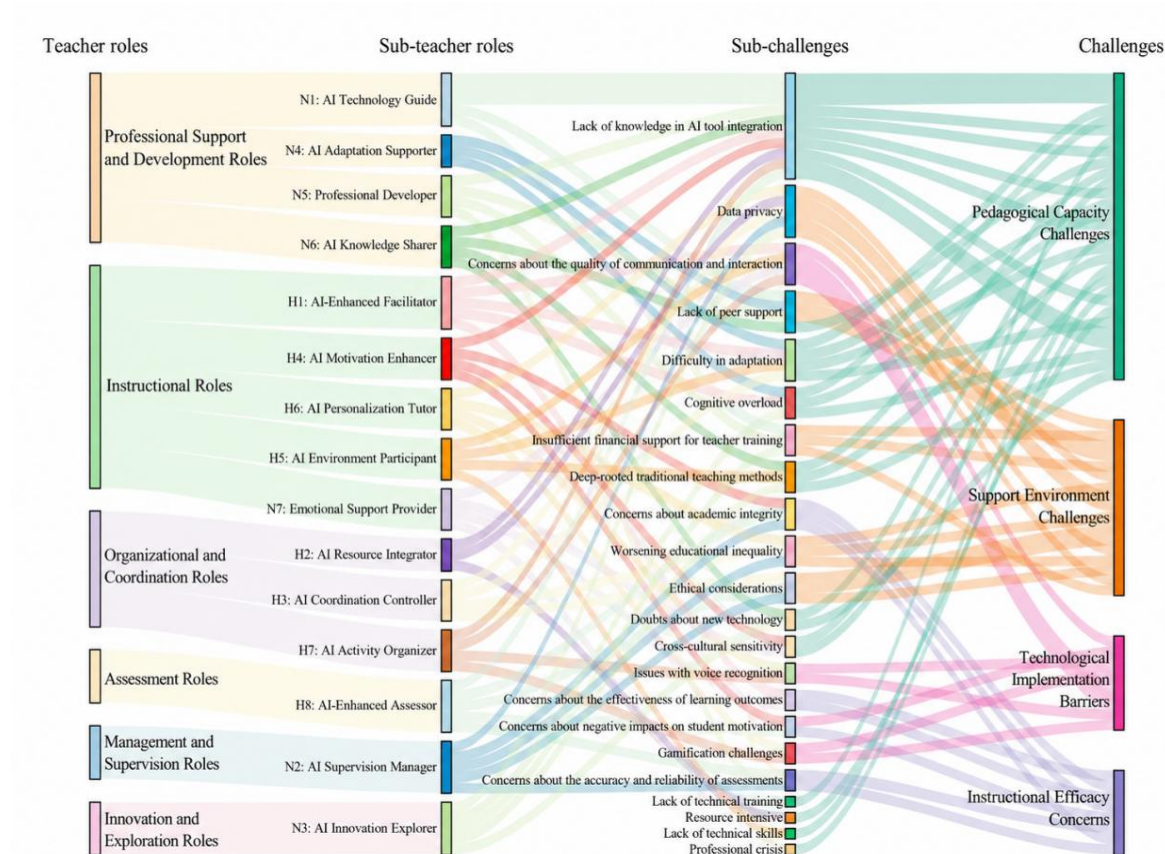


Figure 4: Relationships between teacher roles and professional challenges

4. Discussion

This study found that the reviewed studies were geographically concentrated in China, Indonesia, and Saudi Arabia. This geographical concentration may partly reflect strong demand for English learning and growing institutional interest in AI-supported education in these contexts (Kohnke et al., 2023; Wulandari & Purnamaningwulan, 2024). Research conducted in higher education contexts accounted for 74% of the included studies, indicating that the identified teacher roles and challenges mainly reflect university contexts, while evidence from primary and secondary education remains limited.

In the analysis of AI tool applications in English teaching, assessment and adaptive learning management tools were the most frequently represented AI-tool category (An et al., 2023; Arefian et al., 2024). In contrast, research attention to listening comprehension tools was considerably lower (An et al., 2023; Wulandari & Purnamaningwulan, 2024). This distribution indicates that there are unequal research focuses for English education using AI. Future studies might focus more on applying AI in English teaching in primary and secondary schools to achieve a balanced development of AI technologies at different educational levels and skill areas and on the study of the development and application of AI tools in the listening aspect (Al-khresheh, 2024).

When considering how English language teachers will function in AI-assisted learning contexts, 15 types of teacher roles were found, falling under six categories. Eight role types were identified from Harmer's (2007) traditional teacher-role model, and seven emerging AI-related role types were identified in the open coding process. This expansion implies that rather than supplanting existing teacher roles, AI integration can augment and reconfigure them with new technology-driven responsibilities.

The changed roles also imply the changes in teachers' professional practices (Alsalem, 2024; Mena Octavio et al., 2024). In this transformation, English teachers must improve the pedagogical role and effectiveness of AI technology application to maintain the essence of education and ensure AI technology supports students' personalized learning needs (Arefian et al., 2024; Kohnke et al., 2024; Moorhouse, 2024). In this context, teacher professional development should progress beyond generic AI-skills training to tailored support for specific role requirements. On this basis, future AI skill-building training for English teachers can be carried out based on the 15 role types found, a tiered system of training can be designed, and training standards can be constructed to give institutional guarantees for teacher role transformation.

However, it is acknowledged that there is a significant gap between the changing role of English teachers and the needs of real-world educational situations. They are challenged by various barriers, such as pedagogical capacity barriers, support environment barriers, technological implementation barriers, and instructional efficacy barriers (Hastomo et al., 2024; Slamet, 2024; Yang, 2022). This challenge classification indicates that teachers' challenges in AI integration are not just about technological competence but are related to entanglements between several personal, external, practice, and consequence challenges.

Importantly, these are not four mutually exclusive types of problems but are rather interrelated. Due to their interdependency, support strategies might be better served by tackling more than one dimension of challenges (Hastomo et al., 2024; Mabuan, 2024). Therefore, future study could focus on teachers' attitudes, confidence, and capabilities with AI technology in the process of teacher development in order to analyze the changes in teachers' attitudes, confidence, and skills over time (Tan et al., 2025). Moreover, it is crucial to create and run targeted professional development initiatives that focus on improving teachers' understanding and skills in AI. These programs may include a mix of online courses, seminars, and workshops, including topics on the basics of AI, pedagogical uses, and ethical considerations (Tan et al., 2025).

Finally, the role-challenge analysis revealed that distinct challenge profiles are related to the different teacher-role dimensions and that the pedagogical capacity challenges, as well as the support environment challenges, technological implementation barriers, and instructional efficacy concerns, spanned across multiple teacher roles. Hence, the pattern implies that challenges that are context-specific to the role coexist with challenges that are generic to multiple roles.

A competency perspective, for instance, on competences for professional support and development shows tensions between traditional and digital educational paradigms, indicating that English teachers need to accept technological transformation without compromising the values and fundamentals of English education (Parviz, 2024; Wardat & Akour, 2025). The transformation dilemmas and identity rebuilding linked to instructional roles symbolize the combination challenges of instructional practices and technology applications, in which educators must navigate the balance of conventional education with AI tools (Zulianti et al., 2025).

The complexity of organizational change can be captured in the form of system integration pressures that come from organizational and coordination roles, as the introduction of AI may not be a replacement at the functional or instrumental level but rather a reconstruction of institutions, culture, and values (Liu & Xiao, 2025; Zulianti et al., 2025). Conflicts between humans and AI in assessment roles represent the delicate balance between technology and educational values, especially since English teachers must effectively utilize AI to enhance efficiency while preserving the professionalism and caring spirit of educational assessment (Chung & Jeong, 2024).

The balancing act of whether or not to take up management and supervision positions raises the dilemma between balancing technological governance and educational ethics, between using technology in a compliant manner and providing educational equity and academic integrity (Alsalem, 2024; Chung & Jeong, 2024). However, the impact of resistance to change on the roles played by innovators and explorers identifies several types of resistance in the innovation process; not only technical resistance but also multiple other forms of resistance arise from traditional ideas, institutional inertia, and resource constraints (Assali, 2025; Su et al., 2025).

These findings indicate that a role–challenge–matched support system may be able to expand the remit of the teacher change framework to connect the four challenge dimensions to teacher roles in regard to AI integration. This can involve differentiated professional development, institutional guidelines for human–AI collaboration, and assessment tools for monitoring teacher role transitions (Alharbi, 2024; Gayed, 2025; Hieu & Thao, 2024).

5. Limitations

This study is a review only of empirical studies in the English language indexed in Web of Science, Scopus, and ERIC with a focus on higher education contexts. Due to the rapid development of AI technologies, it is necessary to interpret the findings within the review period. The review was limited to published research from scientific literature, so there is a potential for publication bias. Although the coding procedures were double-checked by a second researcher, and inter-coder agreement was examined, there might yet be some subjectivity in the qualitative coding and categorization.

6. Conclusion

This study aimed to explore the roles, challenges, and relationships between these roles and challenges in AI-enhanced educational environments. This study was designed to investigate the roles, difficulties, and relationships of these roles and difficulties in an AI-assisted learning context. This systematic review included a total of 50 studies. The results of this study are based on five key points. First, there was a geographical and educational-level imbalance in the studies included. as the studies focused on only three countries, namely China, Indonesia, and Saudi Arabia, and mostly on the higher educational level with limited studies in primary and secondary education.

Second, AI technologies used in English teaching were divided into six types: assessment and adaptive learning management tools; writing ability improvement tools; speech expression training tools; reading comprehension assistant tools; integrated language application tools; and listening comprehension support tools. Third, teacher roles in the context of AI integration in English education were categorized into six dimensions: professional support and development roles; instructional roles; organizational and coordination roles; assessment roles; management and supervision roles; and innovation and exploration roles.

Of these, the most attention was paid to the professional support and development roles, while the innovation and exploration roles had the least. Fourth, when taking up these roles, teachers typically encounter four sets of challenges: pedagogical capacity challenges; support environment challenges; technological implementation barriers; and instructional efficacy concerns. Finally, the analysis indicated that various teacher role dimensions were correlated with different challenge profiles and that certain challenges overlapped several teacher roles. The results reveal a framework for the professional transformation and challenges of English teachers in AI-enhanced education and the necessity for role-specific professional development and institutional support.

7. Acknowledgments

The authors acknowledge the use of ChatGPT in the writing and revision of this paper. This tool was used to assist with language refinement, grammar checking, and improving the clarity of expression during manuscript revision. All AI-assisted outputs were carefully reviewed and verified by the authors. The paper remains an accurate representation of the author's work and intellectual contributions.

8. References

- Abd Rahman, S. F., Yunus, M. M., & Hashim, H. (2021). Applying UTAUT in predicting ESL lecturers' intention to use flipped learning. *Sustainability*, 13(15), Article 8571. <https://doi.org/10.3390/su13158571>
- Abou Assali, M. (2025). Bridging the gap: ESL teachers' views on AI integration and its impact on language learning. *World Journal of English Language*, 15(4), 120–127. <https://doi.org/10.5430/wjel.v15n4p120>
- Al-khresheh, M. H. (2024). Bridging technology and pedagogy from a global lens: Teachers' perspectives on integrating ChatGPT in English language teaching.

- Computers and Education: Artificial Intelligence*, 6, Article 100218. <https://doi.org/10.1016/j.caeai.2024.100218>
- Alam, S., Vadivel, B., Banu, S., & Jamalyar, R. (2024). Reflecting the voices of EFL teachers in the world of Intelligent Computer-Assisted Language Assessment (ICALA): An insight into teacher immunity, reflective teaching, job satisfaction, and L2-teacher grit. *Language Testing in Asia*, 14, Article 43. <https://doi.org/10.1186/s40468-024-00314-z>
- Albadarneh, A. M., Daradkah, A. M., Telfah, E. A., Haggag, H. M., Ghawanmeh, F. F., Al-Shunnaq, Y. A., Tawalbeh, M. S., Mahmoud, A. M. A., Shahine, K., & Daradkah, H. S. (2024). Integrating artificial intelligence-powered large language models in English as a foreign language EFL teacher education programs. *Pakistan Journal of Life and Social Sciences*, 22(1), 3006–3015. https://www.pjlss.edu.pk/articles/2024_1/3006-3015.htm
- Alharbi, W. (2024). Mind the gap, please! Addressing the mismatch between teacher awareness and student AI adoption in higher education. *International Journal of Computer-Assisted Language Learning and Teaching*, 14(1), 1–28. <https://doi.org/10.4018/IJCALLT.351245>
- Alhusaiyan, E. (2025). A systematic review of current trends in artificial intelligence in foreign language learning. *Saudi Journal of Language Studies*, 5(1), 1–16. <https://doi.org/10.1108/SJLS-07-2024-0039>
- Aljabr, F. S., & Al-Ahdal, A. A. M. H. (2024). Ethical and pedagogical implications of AI in language education: An empirical study at Ha'il University. *Acta Psychologica*, 251, Article 104605. <https://doi.org/10.1016/j.actpsy.2024.104605>
- Alsalem, M. S. (2024). EFL teachers' perceptions of the use of an AI grading tool (CoGrader) in English writing assessment at Saudi universities: An activity theory perspective. *Cogent Education*, 11(1), Article 2430865. <https://doi.org/10.1080/2331186X.2024.2430865>
- An, X., Chai, C. S., Li, Y., Zhou, Y., Shen, X., Zheng, C., & Chen, M. (2023). Modeling English teachers' behavioral intention to use artificial intelligence in middle schools. *Education and Information Technologies*, 28(5), 5187–5208. <https://doi.org/10.1007/s10639-022-11286-z>
- Arefian, M. H., Çomoğlu, I., & Dikilitaş, K. (2024). Understanding EFL teachers' experiences of ChatGPT-driven collaborative reflective practice through a community of practice lens. *Innovation in Language Learning and Teaching*, 20(2), 318–333. <https://doi.org/10.1080/17501229.2024.2412769>
- Butler, Y. G., & Jiang, S. (2025). How do pre-service language teachers perceive generative AIs' affordance? A case of ChatGPT. *System*, 129, Article 103606. <https://doi.org/10.1016/j.system.2025.103606>
- Chan, K. K. W., & Tang, W. K. W. (2025). Evaluating English teachers' artificial intelligence readiness and training needs with a TPACK-based model. *World Journal of English Language*, 15(1), 129–145. <https://doi.org/10.5430/wjel.v15n1p129>
- Chiu, T. K. F., Xia, Q., Zhou, X., Chai, C. S., & Cheng, M. (2023). Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education: Artificial Intelligence*, 4, Article 100118. <https://doi.org/10.1016/j.caeai.2022.100118>
- Chung, J. Y., & Jeong, S.-H. (2024). Exploring the perceptions of Chinese pre-service teachers on the integration of generative AI in English language teaching: Benefits, challenges, and educational implications. *Online Journal of Communication and Media Technologies*, 14(4), e202457. <https://doi.org/10.30935/ojcmmt/15266>

- Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, 18(8), 947–967. [https://doi.org/10.1016/S0742-051X\(02\)00053-7](https://doi.org/10.1016/S0742-051X(02)00053-7)
- Cong-Lem, N., Tran, T. N., & Nguyen, T. T. (2024). Academic integrity in the age of generative AI: Perceptions and responses of Vietnamese EFL teachers. *Teaching English with Technology*, 24(1), 28–47. <https://doi.org/10.56297/FSYB3031/MXNB7567>
- Du, Y., & Gao, H. (2022). Determinants affecting teachers' adoption of AI-based applications in EFL context: An analysis of analytic hierarchy process. *Education and Information Technologies*, 27(7), 9357–9384. <https://doi.org/10.1007/s10639-022-11001-y>
- Erdem Coşgun, G. (2025). Artificial intelligence literacy in assessment: Empowering pre-service teachers to design effective exam questions for language learning. *British Educational Research Journal*, 51(5), 2340–2357. <https://doi.org/10.1002/berj.4177>
- Gayed, J. M. (2025). Educators' perspective on artificial intelligence: Equity, preparedness, and development. *Cogent Education*, 12(1), Article 2447169. <https://doi.org/10.1080/2331186X.2024.2447169>
- Halim, M. S. A. A., Hashim, H., & Yunus, M. M. (2020). Pupils' motivation and perceptions on ESL lessons through online quiz-games. *Journal of Education and e-Learning Research*, 7(3), 229–234. <https://doi.org/10.20448/journal.509.2020.73.229.234>
- Harmer, J. (2007). *The practice of English language teaching* (4th ed.). Pearson Longman.
- Hastomo, T., Mandasari, B., & Widiati, U. (2024). Scrutinizing Indonesian pre-service teachers' technological knowledge in utilizing AI-powered tools. *Journal of Education and Learning (EduLearn)*, 18(4), 1572–1581. <https://doi.org/10.11591/edulearn.v18i4.21644>
- Heydarnejad, T., & Çakmak, F. (2024). Keep the ball rolling in AI-assisted language teaching: Illuminating the links between productive immunity, work passion, job satisfaction, occupational success, and psychological well-being among EFL teachers. *The International Review of Research in Open and Distributed Learning*, 25(3), 245–270. <https://doi.org/10.19173/irrodl.v25i3.7760>
- Hieu, H. H., & Thao, L. T. (2024). Exploring the impact of AI in language education: Vietnamese EFL teachers' views on using ChatGPT for fairy tale retelling tasks. *International Journal of Learning, Teaching and Educational Research*, 23(3), 486–503. <https://doi.org/10.26803/ijlter.23.3.24>
- Kim, J., Lee, H., & Cho, Y. H. (2022). Learning design to support student–AI collaboration: Perspectives of leading teachers for AI in education. *Education and Information Technologies*, 27(5), 6069–6104. <https://doi.org/10.1007/s10639-021-10831-6>
- Kmet, L. M., Cook, L. S., & Lee, R. C. (2004). *Standard quality assessment criteria for evaluating primary research papers from a variety of fields* (HTA Initiative #13). Alberta Heritage Foundation for Medical Research. <https://doi.org/10.7939/R37M04F16>
- Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). Exploring generative artificial intelligence preparedness among university language instructors: A case study. *Computers and Education: Artificial Intelligence*, 5, Article 100156. <https://doi.org/10.1016/j.caeai.2023.100156>
- Kohnke, L., Zou, D., & Moorhouse, B. L. (2024). Technostress and English language teaching in the age of generative AI. *Educational Technology & Society*, 27(2), 306–320. [https://doi.org/10.30191/ETS.202404_27\(2\).TP02](https://doi.org/10.30191/ETS.202404_27(2).TP02)
- Krishnan, S. D., Norman, H., & Md Yunus, M. (2021). Online gamified learning to enhance teachers' competencies using Classcraft. *Sustainability*, 13(19), Article 10817. <https://doi.org/10.3390/su131910817>

- Kristiawan, D., Bashar, K., & Pradana, D. A. (2024). Artificial intelligence in English language learning: A systematic review of AI tools, applications, and pedagogical outcomes. *The Art of Teaching English as a Foreign Language (TATEFL)*, 5(2), 207–218. <https://doi.org/10.36663/tatefl.v5i2.912>
- Kusuma, I. P. I., Roni, M., Dewi, K. S., & Mahendrayana, G. (2024). Revealing the potential of ChatGPT for English language teaching: EFL preservice teachers' teaching practicum experience. *Studies in English Language and Education*, 11(2), 650–670. <https://doi.org/10.24815/siele.v11i2.34748>
- Le, T. T., Yen, P. H., Pham, T. T., Tran, N. B. C., & Nguyen, T. T. L. (2025). Vietnamese EFL lecturers' perceptions of the role of ChatGPT in facilitating language acquisition among their students. *Journal of Educational Technology Development and Exchange*, 18(1), 175–194. <https://doi.org/10.18785/jetde.1801.10>
- Li, Y., Zhou, X., & Chiu, T. K. F. (2025). Systematics review on artificial intelligence chatbots and ChatGPT for language learning and research from self-determination theory (SDT): What are the roles of teachers? *Interactive Learning Environments*, 33(3), 1850–1864. <https://doi.org/10.1080/10494820.2024.2400090>
- Liu, X., & Xiao, Y. (2025). Chinese university teachers' engagement with generative AI in different stages of foreign language teaching: A qualitative enquiry through the prism of ADDIE. *Education and Information Technologies*, 30(1), 485–508. <https://doi.org/10.1007/s10639-024-13117-9>
- Lukianenko, V., & Kornieva, Z. (2024). Generative AI in student essays: English teachers' perspectives on effective assessment methods. *XLinguae: Scientific Language Journal*, 17(4), 235–250. <https://doi.org/10.18355/XL.2024.17.04.14>
- Lyu, Q., Dai, X., Zhou, B., Wang, F., Dai, L., Xiao, H., & Ni, J.-Q. (2025). Mapping competences for digital empowerment: A systematic review of smallholder farmers' adoption of digital technologies. *Universal Access in the Information Society*, 24(4), 3347–3358. <https://doi.org/10.1007/s10209-025-01238-y>
- Mabuan, R. A. (2024). ChatGPT and ELT: Exploring teachers' voices. *International Journal of Technology in Education*, 7(1), 128–153. <https://doi.org/10.46328/ijte.523>
- Marzuki, Widiati, U., Rusdin, D., Darwin, & Indrawati, I. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective. *Cogent Education*, 10(2), Article 2236469. <https://doi.org/10.1080/2331186X.2023.2236469>
- Mena Octavio, M., González Argüello, M. V., & Pujolà, J.-T. (2024). ChatGPT as an AI L2 teaching support: A case study of an EFL teacher. *Technology in Language Teaching & Learning*, 6(1), Article 1142. <https://doi.org/10.29140/ttl.v6n1.1142>
- Metwally, A. A., & Bin-Hady, W. R. A. (2025). Probing the necessity and advantages of AI integration training for EFL educators in Saudi Arabia. *Cogent Education*, 12(1), Article 2472462. <https://doi.org/10.1080/2331186X.2025.2472462>
- Mohamed, A. M. (2024). Exploring the potential of an AI-based chatbot (ChatGPT) in enhancing English as a foreign language (EFL) teaching: Perceptions of EFL faculty members. *Education and Information Technologies*, 29(3), 3195–3217. <https://doi.org/10.1007/s10639-023-11917-z>
- Moorhouse, B. L. (2024). Beginning and first-year language teachers' readiness for the generative AI age. *Computers and Education: Artificial Intelligence*, 6, Article 100201. <https://doi.org/10.1016/j.caeai.2024.100201>
- Moorhouse, B. L., & Kohnke, L. (2024). The effects of generative AI on initial language teacher education: The perceptions of teacher educators. *System*, 122, Article 103290. <https://doi.org/10.1016/j.system.2024.103290>

- Mustroph, C., & Steinbock, J. (2024). ChatGPT in foreign language education – friend or foe? A quantitative study on pre-service teachers' beliefs. *Technology in Language Teaching & Learning*, 6(1), 1–17. <https://doi.org/10.29140/tl.v6n1.1133>
- Mutammimah, H., Rejeki, S., Kustini, S., & Amelia, R. (2024). Understanding teachers' perspective toward ChatGPT acceptance in English language teaching. *International Journal of Technology in Education*, 7(2), 290–307. <https://doi.org/10.46328/ijte.656>
- Ng, D. T. K., Lee, M., Tan, R. J. Y., Hu, X., Downie, J. S., & Chu, S. K. W. (2023). A review of AI teaching and learning from 2000 to 2020. *Education and Information Technologies*, 28(7), 8445–8501. <https://doi.org/10.1007/s10639-022-11491-w>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372(n71). <https://doi.org/10.1136/bmj.n71>
- Parviz, M. (2024). The double-edged sword: AI integration in English language education from the perspectives of Iranian EFL instructors. *Complutense Journal of English Studies*, 32, e97261. <https://doi.org/10.5209/cjes.97261>
- Parviz, M., & Arthur, F. (2025). Exploring EFL teachers' behavioral intentions to integrate GenAI applications: Insights from PLS-SEM and fsQCA. *Human Behavior and Emerging Technologies*, 2025, Article 5582099. <https://doi.org/10.1155/hbe2/5582099>
- Pokrivcakova, S. (2023). Pre-service teachers' attitudes towards artificial intelligence and its integration into EFL teaching and learning. *Journal of Language and Cultural Education*, 11(3), 100–114. <https://doi.org/10.2478/jolace-2023-0031>
- Said, N. E. M., Yunus, M. M., Doring, L. K., Asmi, A., Aqilah, F., & Li, L. K. S. (2013). Blogging to enhance writing skills: A survey of students' perception and attitude. *Asian Social Science*, 9(16), 95–101. <https://doi.org/10.5539/ass.v9n16p95>
- Schott, C., van Roekel, H., & Tummers, L. G. (2020). Teacher leadership: A systematic review, methodological quality assessment and conceptual framework. *Educational Research Review*, 31, Article 100352. <https://doi.org/10.1016/j.edurev.2020.100352>
- Slamet, J. (2024). Potential of ChatGPT as a digital language learning assistant: EFL teachers' and students' perceptions. *Discover Artificial Intelligence*, 4, Article 46. <https://doi.org/10.1007/s44163-024-00143-2>
- Su, Y., Luo, M., & Zhong, C. (2025). To chat or not: Pre-service English teachers' perceptions of and needs in chatbot's educational application. *SAGE Open*, 15(1). <https://doi.org/10.1177/21582440251321853>
- Tan, X., Cheng, G., & Ling, M. H. (2025). Artificial intelligence in teaching and teacher professional development: A systematic review. *Computers and Education: Artificial Intelligence*, 8, Article 100355. <https://doi.org/10.1016/j.caeai.2024.100355>
- Tran, T. T., Pham, T. T., & Le, T. T. (2024). Transformative interactions: ChatGPT's role in facilitating professional development among Vietnamese English as a foreign language teachers. *Higher Learning Research Communications*, 14(2), 48–63. <https://doi.org/10.18870/hlrc.v14i2.1558>
- Urazbayeva, G., Kussainova, R., Aibergen, A., Kaliyeva, A., & Kantayeva, G. (2024). Innovation off the bat: Bridging the ChatGPT gap in digital competence among English as a foreign language teachers. *Education Sciences*, 14(9), Article 946. <https://doi.org/10.3390/educsci14090946>

- Wardat, S., & Akour, M. (2025). Teachers' use of generative AI in Jordanian universities: Practices and perceptions. *Forum for Linguistic Studies*, 7(6), 90–102. <https://doi.org/10.30564/fls.v7i6.9644>
- Wulandari, M., & Purnamaningwulan, R. A. (2024). Exploring Indonesian EFL pre-service teachers' experiences in AI-assisted teaching practicum: Benefits and drawbacks. *LLT Journal: A Journal on Language and Language Teaching*, 27(2), 878–894. <https://doi.org/10.24071/llt.v27i2.8690>
- Yang, J. (2022). Perceptions of preservice teachers on AI chatbots in English education. *International Journal of Internet, Broadcasting and Communication*, 14(1), 44–52. <https://doi.org/10.7236/IJIBC.2022.14.1.44>
- Yilmaz Virvan, A., & Tomak, B. (2025). AI tools for writing: A Q-method study with Turkish instructors of English. *Education and Information Technologies*, 30(12), 16997–17021. <https://doi.org/10.1007/s10639-025-13455-2>
- Yuan, F., & Chen, M. (2025). A systematic review of measurement tools and senior engagement in urban nature: Health benefits and behavioral patterns analysis. *Health & Place*, 91, Article 103410. <https://doi.org/10.1016/j.healthplace.2024.103410>
- Yunus, M. M., & Suliman, A. (2014). Information & communication technology (ICT) tools in teaching and learning literature component in Malaysian secondary schools. *Asian Social Science*, 10(7), 136–152. <https://doi.org/10.5539/ass.v10n7p136>
- Zaiarna, I., Zhyhadlo, O., & Dunaievskaya, O. (2024). ChatGPT in foreign language teaching and assessment: Exploring EFL instructors' experience. *Information Technologies and Learning Tools*, 102(4), 176–191. <https://doi.org/10.33407/itlt.v102i4.5716>
- Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education: Where are the educators? *International Journal of Educational Technology in Higher Education*, 16(1), Article 39. <https://doi.org/10.1186/s41239-019-0171-0>
- Zhou, C., & Hou, F. (2025). How do EFL teachers utilize AI tools in their language teaching? *Theory and Practice in Language Studies*, 15(2), 403–413. <https://doi.org/10.17507/tpls.1502.10>
- Zulianti, H., Hastuti, H., Nurchurifiani, E., Hastomo, T., Maximilian, A., & Ajeng, G. D. (2025). Enhancing novice EFL teachers' competency in AI-powered tools through a TPACK-based professional development program. *World Journal of English Language*, 15(3), 117–131. <https://doi.org/10.5430/wjel.v15n3p117>

Appendix 1: Examples of the Coding Process

Panel A. AI-tool Category Coding for RQ2

Study	Illustrative extracted evidence	Initial code	Final AI-tool category
Yang (2022)	"AI chatbots can help teachers grade the students' writing or recorded voice."	AI-supported grading and performance assessment	Assessment and adaptive learning management tools
Yang (2022)	AI chatbots stimulate interactive communication and provide opportunities to practise speaking in the target language.	AI-supported interactive speaking practice	Speaking expression training tools
Al-khreshah (2024)	Students used ChatGPT for brainstorming, receiving feedback, and supporting essay-writing activities.	AI-supported writing development and feedback	Writing proficiency enhancement tools

Panel B. Teacher-role Coding for RQ3

Study	Illustrative extracted evidence	Initial code	Final teacher-role category	Coding approach	Relevance
Al-khreshah (2024)	ChatGPT facilitates real-time dialogue and enables students to practise conversational skills instantly.	Facilitating AI-supported interactive learning	H1: AI-Enhanced Facilitator	Framework-based coding	Strong
Yang (2022)	AI chatbots can provide learning materials based on learners' interests and proficiency levels.	Integrating AI-generated learning resources into instruction	H2: AI Resource Integrator	Framework-based coding	Ordinary
Yang (2022)	Teachers can use chatbot-supported data to assess learner performance, monitor progress, and provide feedback.	Conducting AI-supported assessment and feedback	H8: AI-Enhanced Assessor	Framework-based coding	Strong
Mohamed (2024)	Teacher professional development plays a key role in facilitating the effective and cautious integration of ChatGPT.	Continuously developing professional competence for AI integration	N5: Professional Developer	Open coding	Strong

Panel C. Professional-challenge Coding for RQ4

Study	Illustrative extracted evidence	Initial code	Final professional-challenge category
Al-khresheh (2024)	Teachers need the necessary skills and knowledge to integrate ChatGPT effectively with established teaching practices.	Insufficient AI-related technological and pedagogical competence	Pedagogical competence challenges (personal domain)
Parviz and Arthur (2025)	Sociocultural and institutional conditions were identified as important barriers to sustained GenAI integration.	Insufficient institutional and sociocultural support	Supportive environment challenges (external domain)
Al-khresheh (2024)	Teachers expressed concerns about inaccurate linguistic content, excessive learner reliance, and the possible suppression of creativity.	Concerns about AI accuracy and its effects on learning	Concerns about teaching effectiveness (domain of consequence)
Parviz and Arthur (2025)	Large class sizes, time constraints, and rigid curricula complicated the adoption of GenAI tools.	Practical classroom constraints on AI implementation	Barriers to technological implementation (practical domain)

Appendix 2: Distribution of Teacher Roles Across the Included Studies

year	2022	2023	2024	2025 (Jan - Jun)
Professional Support and Development Roles	N1: AI Technology Guide			
	N4: AI Adaptation Supporter			
	N5: Professional Developer			
	N6: AI Knowledge Sharer			
Instructional Roles	H1: AI-Enhanced Facilitator			
	H4: AI Motivation Enhancer			
	H6: AI Personalization Tutor			
	H5: AI Environment Participant			
	N7: Emotional Support Provider			
Organizational and Coordination Roles	H2: AI Resource Integrator			
	H3: AI Coordination Controller			
	H7: AI Activity Organizer			
Assessment Roles	H8: AI-Enhanced Assessor			
Management and Supervision Roles	N2: AI Supervision Manager			
Innovation and Exploration Roles	N3: AI Innovation Explorer			
Teacher roles in AI context				
	(Yang, 2022)	(Du & Gao, 2022)	(An et al., 2023)	(Kohnke et al., 2023)
	(Pokrivcakova, 2023)	(Alrishan, 2023)	(Marzuki et al., 2023)	(Al-khreshel, 2024)
	(Mohamed, 2024)	(Hastomo et al., 2024)	(Mabuan, 2024)	(Cong-Lem et al., 2024)
	(Zulianti et al., 2024)	(Chung & Jeong, 2024)	(Wulandari & Purnaningwulan, 2024)	(Kohnke et al., 2024)
	(Alsalem, 2024)	(Parviz, 2024)	(Moorhouse & Kohnke, 2024)	(Zaiarna et al., 2024)
	(Arefian et al., 2024)	(Mutaminah et al., 2024)	(Albadarneh et al., 2024)	(Slamet, 2024)
	(Alam et al., 2024)	(Aljabr & Al-Ahdal, 2024)	(Lukianenko & Kornieva, 2024)	(Urazbayeva et al., 2024)
	(Moorhouse, 2024)	(Hieu & Thao, 2024)	(Kusuma et al., 2024)	(Hazaymeh et al., 2024)
	(Heydarnejad & Çakmak, 2024)	(Tran & Pham, 2024)	(Alharbi, 2024)	(Octavio, 2024)
	(Mustroph & Steinbock, 2024)	(Parviz & Arthur, 2025)	(Wardat & Akour, 2025)	(Liu & Xiao, 2025)
	(Metwally & Bin-Hady, 2025)	(Gayed, 2025)	(Cosgun, 2025)	(Virilan & Tomak, 2025)
	(Su et al., 2025)	(Assali, 2025)	(Butler & Jiang, 2025)	(Zhou & Hou, 2025)
	(Chan & Tang, 2024)	(Le et al., 2025)		

Strong Relevance Ordinary Relevance

Note. Dark blue indicates strong relevance, and light blue indicates ordinary relevance. Studies are arranged by publication year.