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Johor Bahru, Malaysia**ABSTRACT**

The accelerating integration of artificial intelligence (AI) into English language education is reshaping teachers' instructional roles, professional identity, and professional development. Guided by PRISMA 2020 reporting principles, this systematic literature review synthesised 32 peer-reviewed studies published between 2020 and 2025, focusing on instructional roles ($n = 28$), teacher identity ($n = 23$), and PD ($n = 18$). The most common instructional role shifts involve (a) movement from knowledge transmission to learning facilitation, (b) reconfiguration from teacher-only delivery to human–AI pedagogical collaboration, and (c) transition from manual feedback provision to interpreting, validating, and mediating automated feedback, particularly in assessment. Teacher identity findings highlight tensions around professional authority, epistemic legitimacy, and perceived teacher value, often accompanied by insecurity and anxiety, while also documenting identity reconstruction through increased agency, reflective repositioning, and competence-based self-efficacy. PD needs concentrate on (a) assessment and feedback literacy for AI-mediated tasks, (b) ethical and data-privacy literacy, and (c) practical competence in task design and classroom orchestration with intelligent tools. Practically, policymakers should issue operational guidance for ethical use, data protection, and assessment integrity, alongside funding sustained school-based professional learning; teacher education should embed competence-based preparation in pedagogical co-design with AI, responsible use, and reflective identity work.

KEYWORDS: Artificial Intelligence, Instructional Roles, Teacher Identity, Professional Development, Systematic Literature Review

INTRODUCTION

The rapid development of artificial intelligence has increasingly reshaped educational practices, particularly in English language teaching. Recent research documents the growing integration of tools such as automated feedback systems, generative language models, and intelligent learning platforms into instructional design, classroom interaction, and assessment practices (Chocarro et al., 2021; Chung & Jeong, 2024). While these technologies are often promoted for enhancing efficiency and personalising learning (Butarbutar, 2024; Emerald, 2024), an expanding body of research suggests that artificial intelligence integration also brings substantial professional implications for English language teachers, especially in relation to instructional roles, professional identity, and professional development (Lan, 2024; Satvati et al., 2023; Zaman et al., 2024).

As artificial intelligence–assisted tools become embedded in language classrooms, teachers are increasingly required to reconsider their pedagogical responsibilities and professional positioning. Empirical studies report shifts away from traditional conceptions of teachers as primary knowledge transmitters toward roles such as facilitators, guides, and collaborators in technology-mediated environments (Chen & Pi, 2024; Eslit, 2023; Zainal, 2025). At the same time, scholars note that such role reconfigurations may intensify identity tensions, raising concerns about professional authority, legitimacy, and the place of human judgement in artificial intelligence–enhanced teaching (Chung & Jeong, 2024; Rane et al., 2023; Takona, 2024; Wang, 2025).

Despite the rapid expansion of research on artificial intelligence in English language teaching, the literature remains fragmented in its treatment of teachers' professional experiences. Many studies focus on specific tools, instructional techniques, or perceived pedagogical benefits, while fewer offer a systematic, teacher-centred synthesis of how instructional roles, professional identity, and professional development are reshaped in interconnected ways (Chocarro et al., 2021; Lan, 2024). This fragmentation limits theoretical coherence and constrains the development of institutional and policy-level responses that are sensitive to teachers' professional realities.

These gaps are consequential. Unresolved role shifts and identity tensions have been associated with emotional strain, resistance to technology adoption, and difficulties in aligning innovation with pedagogical values at the individual level (Satvati et al., 2023; Zaman et al., 2024). At the institutional and policy levels, insufficient attention to teachers' lived experiences risks reinforcing training initiatives and technology-driven reforms that prioritise implementation over professional agency, well-being, and sustained development (Lan, 2024).

Moreover, existing studies report divergent teacher responses to artificial intelligence integration. While some portray artificial intelligence as enhancing pedagogical capacity, others emphasise concerns related to deskilling, identity erosion, and the marginalisation of professional judgement (Chen & Pi, 2024; Eslit, 2023; Rane et al., 2023; Takona, 2024). These conflicting findings show that we need a systematic review that does not simply label AI as “good” or “bad”, but instead explains how different policy, institutional, and classroom contexts shape teachers' professional experiences with AI.

These contrasting findings highlight the need for a systematic synthesis that moves beyond polarised accounts and explains how artificial intelligence (AI) shapes teachers' professional experiences in different settings. In response, this study conducts a PRISMA-guided systematic literature review of empirical research on AI and English language teachers in AI-enhanced educational contexts. The review is organised around three interrelated dimensions, instructional role transformation, professional identity negotiation, and professional development, and focuses on contexts where English is taught as a second or foreign language. By consolidating currently fragmented evidence, the review seeks to identify convergent and divergent patterns across studies and to clarify how AI reshapes teachers' professional practices, identity work, and learning trajectories in language education.

Accordingly, the review addresses the following research questions:

1. How has artificial intelligence influenced English language teachers' instructional roles?
2. How do English language teachers negotiate their professional identity in artificial intelligence-enhanced educational contexts?
3. What opportunities and challenges do artificial intelligence present for teachers' professional development?

The Findings section presents a three-part thematic synthesis aligned with these research questions, followed by a Discussion that interprets the results through an ecological lens and advances a systemic interaction model linking instructional roles, professional identity, and professional development.

METHODOLOGY

Search Strategy and Study Selection

This systematic literature review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (2020) reporting guidance to ensure transparent reporting of the search and selection process (Page et al., 2021). The review protocol was not preregistered; however, the search strategy, eligibility criteria, and screening procedures were specified in advance and applied consistently. This is noted as a limitation.

A database search was conducted in Google Scholar, Web of Science, and Scopus. The search targeted peer-reviewed journal articles and conference papers published between 2020 and 2025. Search strings combined terms related to artificial intelligence (for example, "artificial intelligence," "generative artificial intelligence," "ChatGPT") with terms related to language teachers and the focal professional dimensions (for example, "instructional roles," "teacher identity," "professional development"). Boolean operators were used, with minor syntax adjustments across databases.

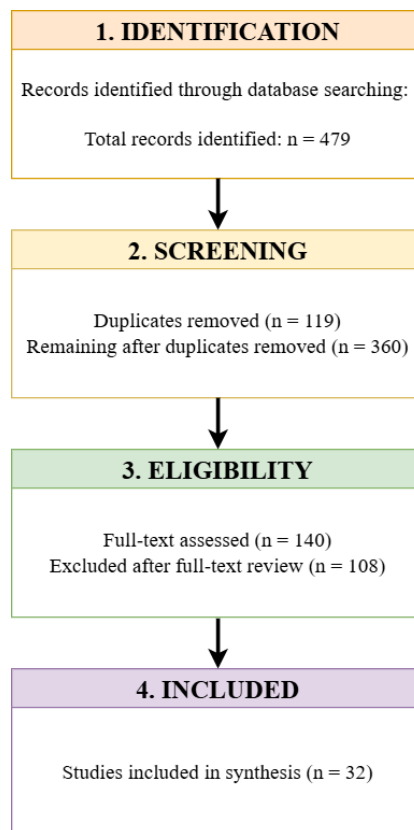
Records retrieved from the three databases were exported, merged, and deduplicated. Screening proceeded in two stages: title and abstract screening, followed by full-text screening against the eligibility criteria. Studies were included if they (a) focused on language teachers as the primary population, (b) examined artificial intelligence integration in teaching-related practices or professional experiences, and (c) addressed at least one of the three focal dimensions: instructional roles,

professional identity, or professional development. Eligible evidence types included empirical studies and theoretically grounded or review-based studies with substantive relevance to teacher-related dimensions.

Studies were excluded if they focused on non-language disciplines, examined artificial intelligence applications unrelated to teaching practice (for example, administrative systems), or presented opinion-based commentary without analytical grounding. Only studies published in English or available in an English-language version were included. The selection process resulted in 32 studies retained for qualitative synthesis, and the screening counts are summarised in the flow diagram (Figure 1).

Figure 1

Study selection flow diagram based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 guidelines



Data Extraction and Thematic Analysis

A data extraction matrix was created for all 32 included studies (see Appendix A for the full extraction table). For each study, publication year, research context, methodological orientation, artificial intelligence focus, and teacher-related findings were extracted to support cross-study comparison. Thematic analysis was conducted through iterative coding of each study's research questions, theoretical framing, and reported findings. Codes were first generated at the study level and then compared across studies to form higher-order categories. The final coding framework comprised three

thematic domains: instructional roles, teacher identity, and professional development, with inductively derived subthemes summarised in Table 1 and documented in Appendix A. The three domains were coded as non-exclusive. A single study was assigned to more than one domain when it reported evidence relevant to multiple teacher dimensions. Therefore, although the dataset included 32 studies, domain counts overlap: instructional roles (28 studies), teacher identity (23 studies), and professional development (18 studies). A quality appraisal was undertaken for all included studies, considering aim clarity, contextual description, transparency of sampling and data collection, adequacy of analytic reporting, and coherence between claims and supporting evidence. These judgements were not used as exclusion criteria; rather, they informed the weighting of individual studies and guided interpretive caution during the synthesis.

Table 1

Thematic Categories and Subcategories Identified from the Reviewed Studies

Thematic Category	Number of Studies (n)	Inductively Derived Subthemes
Instructional Roles	28	Role shift from knowledge transmitter to learning facilitator; reconfigured instructional authority and classroom control; role repositioning from authority figure to supporter/assistant (co-teacher)
Teacher Identity	23	Identity tensions and reconstruction; technological self-concept and resistance/ambivalence; professional positioning and value renegotiation
Professional Development	18	AI-related tool and pedagogical training needs; ethical literacy (e.g., privacy, plagiarism, accountability); integration into teacher education and institutional support; reflective practice and ongoing adaptation

LITERATURE SYNTHESIS AND ANALYTICAL FRAMEWORK

Overview of the Synthesis Logic

Framed by ecological systems theory and research on teacher professional identity (Beijaard et al., 2004; Bronfenbrenner, 1979), this section presents a theoretically informed thematic synthesis of 32 studies to address the three research questions on teachers' instructional roles, professional identity, and professional development in artificial intelligence-enhanced educational contexts. Each study was coded against these three analytical domains, and the resulting codes were compared across studies to identify recurring patterns, tensions, and gaps. Because individual studies often engaged with more than one domain, the domain-specific theme counts are non-mutually exclusive.

Rather than offering a study-by-study summary, the synthesis foregrounds cross-study contradictions, such as whether AI enhances or undermines teacher agency, and relates them to methodological tendencies and contextual conditions. Ecological perspectives are used to situate these patterns within policy, institutional, and classroom environments, while identity perspectives illuminate how teachers position themselves and are positioned in AI-enhanced settings (Li, 2023; Satvati et al., 2023). Section 3.2 applies these lenses to trace temporal shifts in role-, identity-, and PD-related themes, and Section

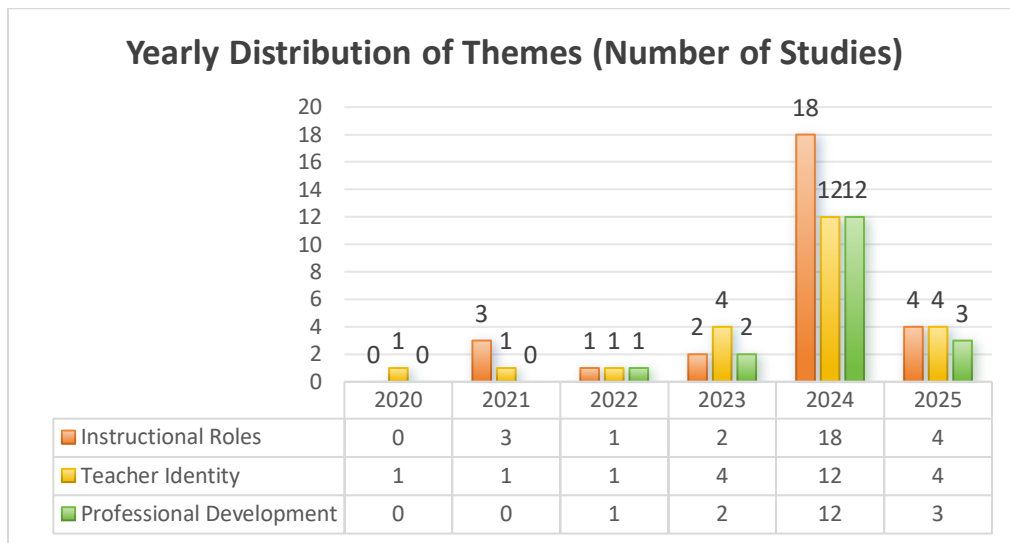
3.3 develops an integrated ecological synthesis (Figure 3) that explains why role change, identity negotiation, and professional development demands co-occur—and sometimes diverge—across different contextual configurations.

Temporal Distribution of Research Themes

To contextualize the thematic synthesis, a temporal analysis of the included studies was conducted. Figure 2 illustrates the yearly distribution of studies focusing on instructional roles, teacher identity, and professional development between 2020 and 2025.

Figure 2

Yearly Distribution of Research Themes from 2020 to 2025



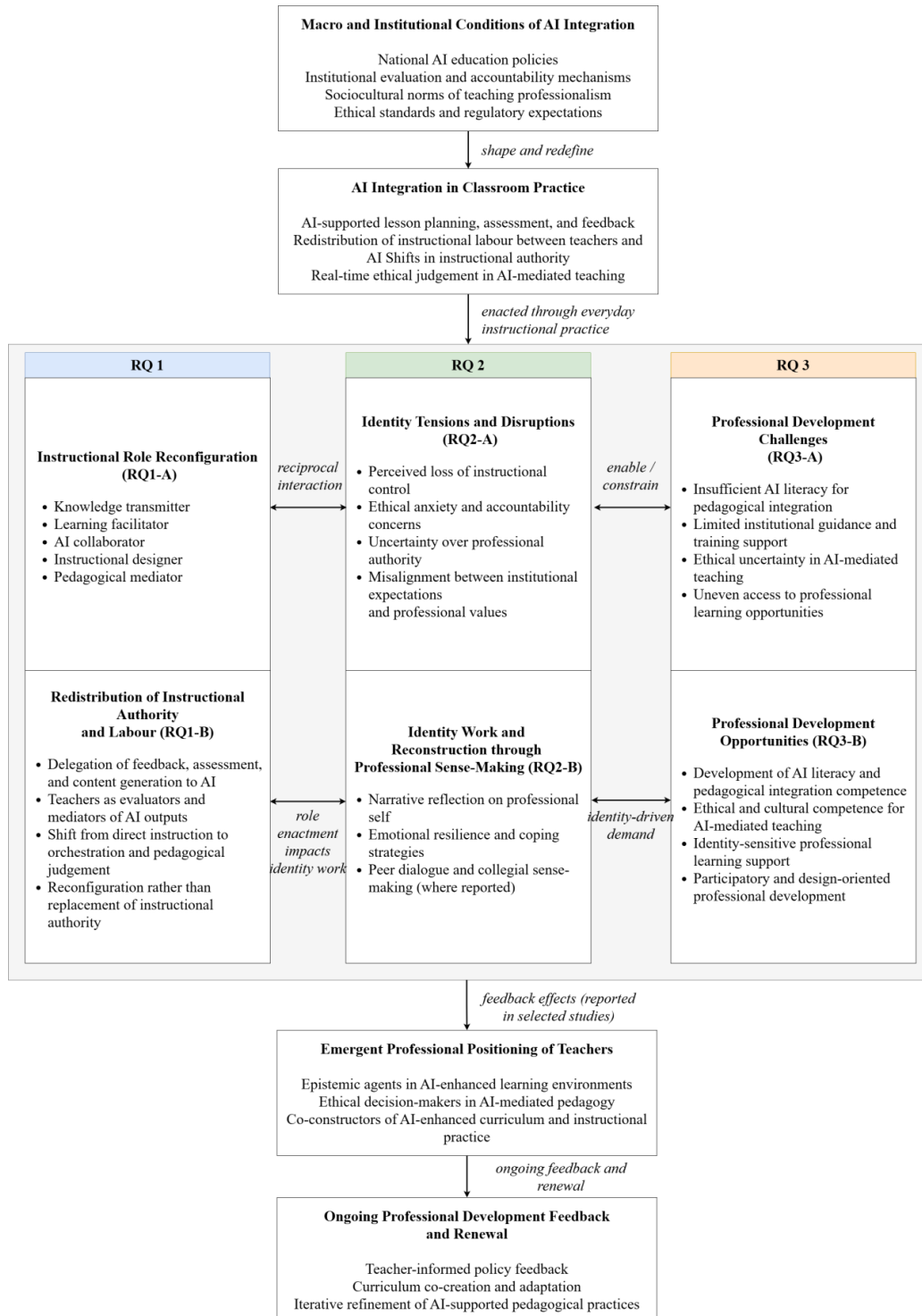
Overall, during this period, 28 studies addressed instructional roles, 23 examined teacher identity, and 18 focused on professional development. Research output remained limited between 2020 and 2022, followed by a clear acceleration in 2023 and a peak in 2024 (instructional roles = 18; teacher identity = 12; professional development = 12), with a slight decline in 2025 that likely reflects the April 2025 search cut-off. Beyond documenting growth, this temporal pattern suggests that teacher-focused AI research has been shaped by a recent surge of GenAI-driven attention, which may have accelerated publication volume faster than conceptual consolidation. As a result, the literature risks emphasising short-term responsiveness to emerging tools while underdeveloping cumulative, cross-context explanations of how role change, identity negotiation, and professional learning interact over time. This review therefore treats the 2023–2024 expansion as an opportunity—and a necessity—to move from “what increased” to “what coheres,” using an integrative ecological synthesis to identify recurring mechanisms and persistent gaps across the three themes.

Integrated Analytical Synthesis of Teachers’ Professional Transformation in AI-Enhanced Educational Contexts (RQ1–RQ3)

Synthesising evidence across instructional role reconfiguration (RQ1), professional identity negotiation (RQ2), and professional development opportunities and challenges (RQ3), this section develops an integrated analytical synthesis to address a recurrent pattern in the reviewed literature: the

coexistence of broadly convergent trends and apparently conflicting conclusions regarding teachers' professional experiences under AI integration (See Figure 3).

Figure 3
An ecological synthesis of instructional role reconfiguration, identity negotiation, and professional development under AI integration



Across the reviewed studies, AI integration is consistently associated with changes in teachers' instructional roles, most visibly through the redistribution of instructional labour in lesson planning, assessment, and feedback. Yet these changes do not carry uniform professional significance. In experimental or intervention-oriented contexts, AI-supported practices are often linked to increased efficiency and pedagogical flexibility. By contrast, studies situated in high-stakes or tightly regulated institutional environments frequently report limited pedagogical transformation despite comparable levels of AI adoption. This contrast suggests that instructional role reconfiguration is contingent rather than self-sustaining, shaped by policy constraints, accountability regimes, and prevailing norms of teaching professionalism.

Role reconfiguration is closely bound up with professional identity negotiation. Where institutional conditions allow teachers to reinterpret AI as a pedagogical resource, role change is more likely to be experienced as professionally affirming. Conversely, in contexts characterised by strong evaluative pressures or unclear accountability structures, similar role changes tend to generate identity tensions related to instructional control, ethical responsibility, and professional authority. These divergent responses therefore reflect not contradiction in the literature, but variation in how emerging role expectations are interpreted within specific institutional and cultural frames. Across studies, a further pattern concerns the sequencing of change. Behavioural adaptation to AI—often driven by institutional demand or efficiency imperatives—frequently precedes deeper shifts in professional self-understanding. As a result, teachers may enact new roles without corresponding identity reconstruction. This misalignment challenges linear assumptions of technology-driven professional transformation and highlights the distinction between surface-level role enactment and more sustained processes of identity work.

Within this dynamic, professional development assumes a mediating rather than consequential role. Professional learning initiatives focused primarily on technical competence tend to support operational uptake without resolving underlying pedagogical, ethical, or identity-related concerns. In contrast, approaches that foreground reflection, dialogue, and ethical deliberation position professional development as a site of professional sense-making, enabling teachers to negotiate evolving role expectations and rearticulate professional identity. This contrast helps explain why professional development is depicted across the literature as both enabling and constraining within AI-enhanced educational contexts. Accordingly, the synthesis does not posit a single trajectory of professional change, but interprets divergent findings through an ecological lens that foregrounds contextual variation. Viewed through this lens, teachers' professional transformation under AI integration can be understood as an ecologically situated process produced through the interaction of instructional role reconfiguration, professional identity negotiation, and professional development. The framework accounts for why similar AI technologies generate divergent professional outcomes across contexts and provides a coherent analytical basis for interpreting the RQ1–RQ3 evidence presented in the following sections.

FINDINGS

Guided by the integrated analytical synthesis outlined above, the findings in Chapter 4 are organised around the three research questions, focusing respectively on instructional role transformation, teacher identity negotiation, and professional development dynamics. The evidence base spans primary, secondary, and higher education, but is concentrated in higher education and teacher education, with many studies situated in foreign language teaching settings in Asia and Europe. This contextual profile

frames the interpretation of patterns and the boundaries of transferability across the three sections that follow.

Roles Transformation in AI-Enhanced Contexts (ROI)

This section addresses the first research question by synthesising how artificial intelligence reshapes teachers' instructional roles, focusing on reported role shifts, the conditions shaping these shifts, and how role enactment evolves over time within the contextual distribution outlined above.

How teachers' instructional roles shift under AI integration: role patterns

Figure 4

Distribution of Teacher Role Transformation Types in AI Contexts

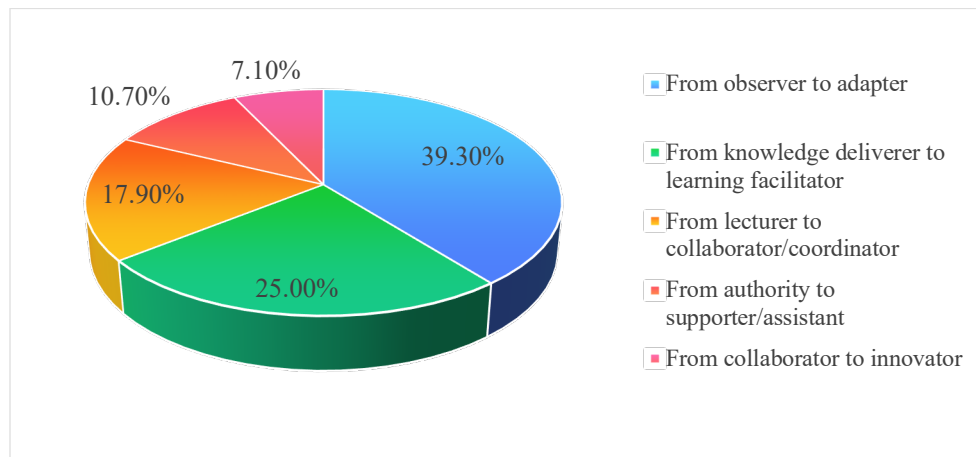


Table 2

Distribution of Studies Supporting Role Transformation Subthemes

Role Transformation Subtheme	No. of Studies	Typical Contexts	Representative Studies
From Observer to Adapter	11	Higher education and teacher education; predominantly survey-based or mixed-methods studies; early-stage AI adoption; use of generative AI and AI-supported assessment tools	Pokrivcakova (2023); Varsamidou (2024); Chocarro et al. (2021); Zhai et al. (2021); Celik (2022)
From Knowledge Deliverer to Learning Facilitator	7	Higher education and upper-secondary contexts; learner-centred pedagogy; AI-mediated access to knowledge; generative AI and automated feedback tools	Lan (2024); Gao (2024); Zhou et al. (2024); Ghiasvand & Seyri (2025); Sawangwan (2024)
From Lecturer to Collaborator / Coordinator	5	Secondary and tertiary education; classroom-level AI integration; distributed pedagogical responsibility; qualitative and mixed-methods designs	Yuan & Yang (2024); Chen et al. (2024); Tang (2023); Moorhouse et al. (2024); Zhong et al. (2023)
From Authority Figure to Supporter / Assistant	3	Higher education contexts; AI-assisted assessment and feedback	Zhang & Wang (2024); Zhao & Lin (2024); Zaman et al. (2024)

Role Transformation Subtheme	No. of Studies	Typical Contexts	Representative Studies
From Collaborator to Innovator	2	systems; emphasis on affective support and ethical supervision Conceptual and design-oriented studies; curriculum innovation; institutional or system-level AI experimentation	Zhai (2024); Shao & Sun (2025)

Figure 4 and Table 2 report the distribution of instructional role transformation subthemes across the reviewed studies, with study-level evidence (contexts and representative studies) mapped in Table 2. Five from-to role transformation patterns were identified. The shift from observer to adapter is most frequently reported (39.3%), describing cautious, instrumental use of generative or automated assessment tools while instructional authority largely remains with teachers. The transition from knowledge deliverer to learning facilitator accounts for 25.0%, reported mainly in higher education and upper-secondary contexts where access to linguistic knowledge and learning resources becomes tool-mediated. The shift from lecturer to collaborator or coordinator represents 17.9%, involving teachers orchestrating tool-mediated learning and student-tool interaction while retaining pedagogical and ethical responsibility. The transition from authority figure to supporter or assistant accounts for 10.7%, most often in assessment and feedback contexts with partial redistribution of instructional functions. The shift from collaborator to innovator is least frequent (7.1%), reflecting curriculum redesign or institution-level experimentation.

What conditions shape role change: ecological drivers and constraints

While the categorization above captures what forms of role transformation are reported, the reviewed studies also shed light on why such changes occur. Drawing on an ecological perspective, the literature identifies interacting drivers at system, institutional, and individual levels, which jointly shape teachers' instructional role reconfiguration (Satvati et al., 2023; Tan et al., 2025; Zhou et al., 2024).

At the system level, policy discourses and technological narratives frequently frame AI as a means to enhance efficiency, personalization, and innovation in education (Celik et al., 2022; Tan et al., 2025; Zhai et al., 2021). Such discourses implicitly reposition instructional authority by assigning AI systems responsibilities traditionally associated with teachers, including content delivery, assessment, and feedback (Celik et al., 2022; Shao & Sun, 2025; Yuchun Zhong et al., 2023). Across studies, this redefinition creates structural pressure for teachers to shift away from knowledge transmission toward facilitation and pedagogical judgment, often without clear guidance regarding professional boundaries or accountability (Shao & Sun, 2025; Zaman et al., 2024).

At the institutional level, schools and teacher education providers act as mediators between policy expectations and classroom practice (Satvati et al., 2023; Zhou et al., 2024). Many studies report that institutions support AI adoption at a technical level while maintaining conventional curricular and assessment structures (Moorhouse et al., 2024; Varsamidou, 2024; Zhou et al., 2024). This misalignment contributes to partial or uneven role transformation, as teachers are encouraged to integrate AI tools yet remain fully accountable for learning outcomes and ethical oversight (Chung & Jeong, 2024; Moorhouse et al., 2024; Satvati et al., 2023). Institutional constraints thus play a decisive role in limiting or enabling deeper forms of role reconfiguration (Satvati et al., 2023; Tan et al., 2025; Zhou et al., 2024).

At the individual level, role transformation is shaped by teachers' agency, beliefs, and professional risk perceptions (Eun & Kim, 2024; Ghiasvand & Seyri, 2025; Lan, 2024). Teachers differ in their willingness to experiment with AI and reinterpret instructional responsibilities (Ghiasvand & Seyri, 2025; Zaman et al., 2024; Zhou et al., 2024). For some, AI affords opportunities to reposition themselves as facilitators or collaborators; for others, it raises concerns about professional legitimacy and loss of control (Satvati et al., 2023; Zaman et al., 2024; Shao & Sun, 2025). Importantly, individual agency operates within ecological constraints, as even highly motivated teachers may struggle to sustain transformed roles without supportive institutional and systemic conditions (Satvati et al., 2023; Lan, 2024; Zhou et al., 2024).

How role change unfolds over time: pathways of role enactment

Beyond static categorization, several studies conceptualize teacher role transformation as a dynamic and non-linear process (Lan, 2024; Ghiasvand & Seyri, 2025; Zhou et al., 2024). Drawing on the reviewed literature, instructional role evolution can be broadly described through four recurrent orientations: Observer, Adopter, Collaborator, and Innovator (Zhai, 2024). These orientations represent tendencies of engagement rather than fixed stages, and teachers may progress, stagnate, or regress depending on contextual conditions (Lan, 2024; Satvati et al., 2023; Zhou et al., 2024).

At the Observer orientation, teachers demonstrate awareness of AI technologies but engage with them only sporadically, often for peripheral tasks (Varsamidou, 2024; Zhai, 2024). At the Adopter orientation, AI is integrated instrumentally to support efficiency or workload management, while core pedagogical structures remain intact (Varsamidou, 2024; Moorhouse et al., 2024; Zhai, 2024). The Collaborator orientation involves deeper pedagogical integration, with teachers coordinating AI-mediated learning and redefining instructional responsibility (Lan, 2024; Moorhouse et al., 2024; Ghiasvand & Seyri, 2025). The Innovator orientation, reported least frequently, reflects teachers' engagement in curriculum design, institutional experimentation, and ethical governance of AI use (Zhai, 2024; Tan et al., 2025; Brandão et al., 2024).

Across studies, movement between these orientations is described as contingent and reversible, shaped by institutional support, professional recognition, and ongoing access to training (Satvati et al., 2023; Zhou et al., 2024; Moorhouse et al., 2024). These findings underscore that instructional role transformation in AI-enhanced education is not driven solely by technological competence, but by the broader ecological conditions that legitimize and sustain teachers' evolving roles (Lan, 2024; Satvati et al., 2023; Tan et al., 2025).

Professional Identity Negotiation in AI-Enhanced Contexts (RQ2)

This section addresses the second research question by examining how teachers negotiate professional identity in contexts where artificial intelligence is integrated, focusing on identity tensions, the conditions that intensify or alleviate them, and pathways of identity work and reconstruction.

What identity tensions emerge under AI integration: subthemes of disruption

Figure 5

Treemap Distribution of Teacher Identity Tension Sub-Themes by Study Frequency

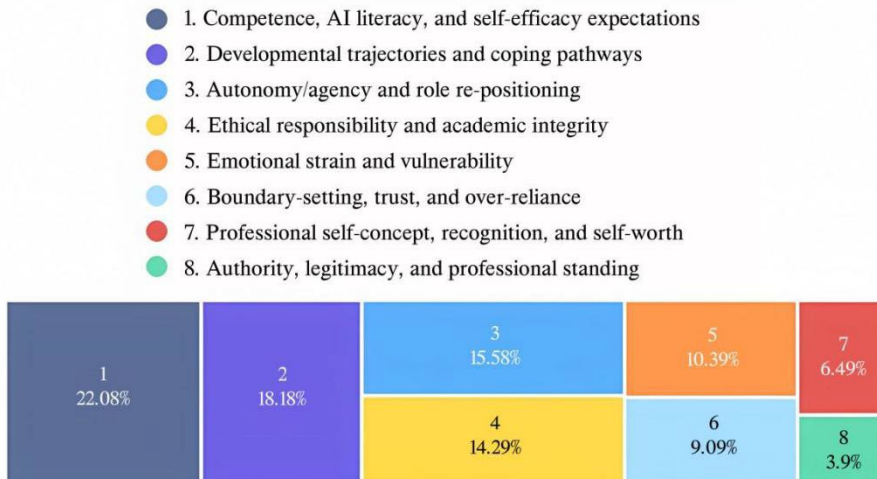


Table 3

Teacher Identity Tension Sub-Themes and Representative Supporting Studies

Subtheme	Description (Analytical Focus)	No. of Studies	Representative Studies (2–3)
Competence, AI literacy, and self-efficacy expectations	AI competence expectations unsettle expertise and self-efficacy.	17	Lan (2024); Lai & Jin (2021); Zhai (2024)
Developmental trajectories and coping pathways	Teachers follow adjustment pathways to repair and stabilise identity.	14	Ghiasvand & Seyri (2025); Lan (2024); Zaman et al. (2024)
Autonomy/agency and role re-positioning	Reduced instructional control triggers agency negotiation and role re-positioning.	12	Satvati et al. (2023); Zhou et al. (2024); Lai & Jin (2021)
Ethical responsibility and academic integrity	Ethical and integrity risks reshape accountability and moral positioning.	11	Ulla, Perales, & Busbus (2023); Zaman et al. (2024); Tan et al. (2025)
Emotional strain and vulnerability	Anxiety and burnout reflect affective strain during AI adoption.	8	Luo & Zou (2024); Alam et al. (2024); Wu et al. (2025)
Boundary-setting, trust, and over-reliance	Trust dilemmas and over-reliance intensify boundary work and judgement demands.	7	Celik (2022); Tan et al. (2025); Zhou et al. (2024)
Professional self-concept, recognition, and self-worth	Recognition shifts disrupt professional self-concept and self-worth.	5	Chamo (2024); Zhai (2024); Satvati et al. (2023)
Authority, legitimacy, and professional standing	AI challenges teachers' authority and professional legitimacy.	3	Zhong et al. (2023); Zaman et al. (2024); Shao & Sun (2025)

Figure 5 and Table 3 summarise eight recurring identity-tension subthemes and their relative prominence across the evidence base using non-mutually exclusive coding. The treemap distribution shows that identity negotiation most frequently revolves around competence, AI literacy, and self-efficacy expectations ($n = 17$; 22.08%), followed by developmental trajectories and coping pathways ($n = 14$; 18.18%) and autonomy/agency and role re-positioning ($n = 12$; 15.58%). Two further clusters—ethical responsibility and academic integrity ($n = 11$; 14.29%) and emotional strain and vulnerability ($n = 8$; 10.39%)—appear less dominant in frequency but recur consistently enough to indicate persistent underlying pressures that shape teachers' moral positioning and affective stability. More context-sensitive tensions relate to boundary-setting, trust, and over-reliance ($n = 7$; 9.09%) and professional self-concept, recognition, and self-worth ($n = 5$; 6.49%), which tend to surface when AI use alters teachers' visibility, evaluative authority, or perceived contribution. Finally, authority, legitimacy, and professional standing shows the lowest frequency ($n = 3$; 3.90%), suggesting that legitimacy challenges are not universal but become salient in particular environments where AI-mediated outputs strongly compete with teacher judgement or where technology-intensive delivery amplifies comparisons. Overall, the categorisation clarifies which tensions are structurally central (competence/agency), which operate as persistent background conditions (ethical and emotional strain), and which are more contingent on setting and governance (recognition and legitimacy), providing an evidence-based platform for the ecological explanation developed next.

What conditions intensify or alleviate identity tensions: ecological influences

Beyond identifying identity-related subthemes, the reviewed studies indicate that identity tensions in artificial intelligence-enhanced contexts arise from interacting ecological influences rather than individual attitudes alone. Across the literature, professional identity transformation is shaped by the alignment, or misalignment, of system-level rationalities, institutional arrangements, and teachers' situated sense-making, producing both intensifying and alleviating effects.

At the system level, policy and scholarly discourses frequently frame artificial intelligence in terms of efficiency, innovation, and personalization, recalibrating professional value toward measurable performance while retaining traditional expectations of accountability and ethical responsibility (Zhai, 2024; Zhai et al., 2021). Several studies suggest that this asymmetry intensifies identity tension by positioning teachers as implementers or mediators of artificial intelligence-enhanced practice without clearly redefining professional authority, responsibility boundaries, or moral agency (Brandão et al., 2024; Shao & Sun, 2025; Tan et al., 2025). Identity tension is thus heightened when expectations for integration advance faster than guidance on professional rearticulation.

Institutional mediation further conditions these effects. Across school and higher education contexts, teachers are often encouraged to adopt artificial intelligence tools while remaining fully accountable for academic integrity, learning outcomes, and ethical compliance (Alam et al., 2024; Chamo, 2024; Ulla et al., 2024). Where institutional logics prioritise compliance, standardisation, or performance indicators, teachers report reduced autonomy and heightened identity strain (Duan & Zhao, 2024). By contrast, institutions that embed structured training, sustained professional learning, and explicit recognition of evolving responsibilities tend to enable more constructive identity negotiation, supporting repositioning toward facilitative, regulatory, and ethically oriented roles (Brandão et al., 2024; Lan, 2024; Mikeladze et al., 2024).

At the individual level, identity outcomes are shaped by teachers' perceived competence, pedagogical beliefs, and emotional labour demands, but remain ecologically bounded. Studies on artificial

intelligence literacy and self-efficacy indicate that teachers who feel competent and institutionally supported are more likely to renegotiate professional identity toward evaluative and ethically grounded forms of expertise (Chung & Jeong, 2024; Eun & Kim, 2024; Lan, 2024). Conversely, low confidence, heavy workload, and ambiguous expectations are associated with heightened anxiety and identity instability (Duan & Zhao, 2024; Luo & Zou, 2024; Zaman et al., 2024). Across studies, sustained identity reconstruction is difficult to maintain in the absence of alignment across system and institutional conditions (Satvati et al., 2023; Zawacki-Richter et al., 2019).

How teachers reconstruct identity: sense-making pathways and identity work

While the subthemes above capture what kinds of identity transformations are reported, the reviewed literature also suggests that identity change unfolds as a dynamic and non-linear trajectory. Across contexts, teachers may move between different identity positions as they experiment with AI tools, encounter institutional constraints, and renegotiate professional meaning over time (Celik, 2022; Zhai, 2024).

A recurring pattern describes early phases characterized by identity uncertainty, in which teachers question professional legitimacy and authority as AI becomes more visible in instructional, feedback, and evaluative processes (Zhong et al., 2023; Alam et al., 2024). With increased experience, training, and exposure to AI-supported pedagogy, some teachers shift toward agentic repositioning, reframing professional identity around pedagogical mediation, critical evaluation of AI outputs, and ethical guidance (Lan, 2024; Zhou et al., 2024; Satvati et al., 2023). In more supportive institutional environments, a smaller set of studies conceptualize later phases as future-oriented identity enactment, where teachers assume broader responsibilities such as AI-related curriculum design, professional development leadership, and ethical governance of AI use (Brandão et al., 2024; Shao & Sun, 2025; Zhai, 2024).

Importantly, these pathways are reported as contingent and reversible rather than progressive or inevitable. Teachers may retreat to more conservative identity enactments when AI tools fail to deliver pedagogical value, when institutional accountability pressures intensify, or when professional recognition is absent (Celik, 2022; Duan & Zhao, 2024; Luo & Zou, 2024). Consequently, teacher identity transformation in AI-enhanced education is best understood as a negotiated process shaped by ecological conditions, professional risk management, and contextual affordances, rather than as a stable outcome of technology adoption.

Professional Development Opportunities and Challenges in AI-Enhanced Contexts (RQ3)

This section addresses the third research question by synthesising how artificial intelligence integration reshapes teachers' professional development, highlighting learning opportunities, persistent challenges, and the conditions under which professional development supports or constrains adaptation within the contextual profile of the reviewed studies.

What professional development needs are reported: key opportunities and challenges

In response to RQ3, this section synthesises reported professional development needs related to artificial intelligence integration in English language teaching. Included studies were coded into one or more professional development sub-themes. Table 4 summarises the number of studies supporting each sub-theme, and Figure 6 visualises their frequency distribution.

Figure 6
Identified Professional Development Needs of Teachers in AI Contexts

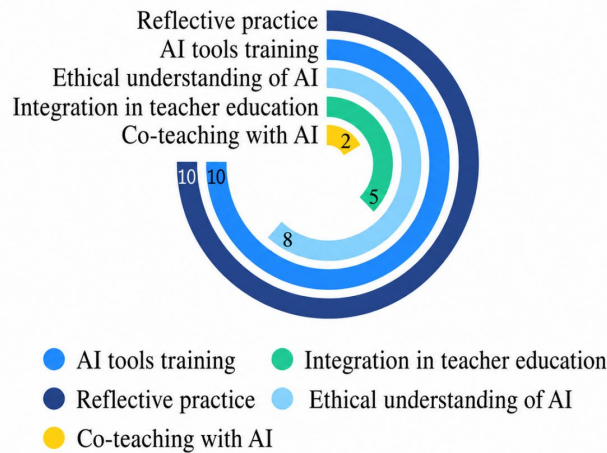


Table 4
Distribution of Studies Supporting Teachers' Professional Development Sub-Themes

PD Sub-Theme	Description (Analytical Focus)	No. of Studies (n = 18)	Studies Contributing to This Sub-Theme
AI tools training	Professional development focusing on teachers' acquisition of AI-related knowledge, skills, and operational competence	10	Pokrivcakova (2023); Varsamidou (2024); Chung & Jeong (2024); Lan (2024); Luo & Zou (2024); Celik (2022); Duan & Zhao (2024); Mikeladze et al. (2024); Brandão et al. (2024); Tan et al. (2025)
Integration in teacher education	PD embedded in pre-service or in-service teacher education programs and formal curricula	5	Pokrivcakova (2023); Chung & Jeong (2024); Brandão et al. (2024); Moorhouse et al. (2024); Wu et al. (2025)
Reflective practice	PD through reflection, sense-making, and experiential learning in AI-mediated teaching contexts	10	Chamo (2024); Lan (2024); Satvati et al. (2023); Zaman et al. (2024); Luo & Zou (2024); Zawacki-Richter & Naidu (2024); Zhai (2024); Wu et al. (2025); Shao & Sun (2025); Brandão et al. (2024)
Ethical understanding of AI	PD emphasizing ethical awareness, responsibility, and moral judgment in AI-enhanced education	8	Satvati et al. (2023); Zaman et al. (2024); Celik (2022); Mikeladze et al. (2024); Zhai (2024); Brandão et al. (2024); Tan et al. (2025); Shao & Sun (2025)
Co-teaching with AI	PD involving collaborative or complementary teaching roles between teachers and AI systems	2	Moorhouse et al. (2024); Wu et al. (2025)

Table 4 and Figure 6 show that professional development is most frequently conceptualised in terms of artificial intelligence tools training and reflective practice (both $n = 10$), indicating that teachers' learning is primarily framed around operational competence and individual sense-making. Ethical understanding of artificial intelligence appears with moderate frequency ($n = 8$), reflecting growing attention to responsibility and accountability in artificial intelligence-mediated teaching.

In contrast, more structurally embedded forms of professional development are less frequently reported. Integration into teacher education programmes ($n = 5$) and co-teaching with artificial intelligence ($n = 2$) remain comparatively marginal, suggesting limited institutionalisation and weak linkage to sustained pedagogical redesign. Overall, the distribution indicates a concentration on short-term, skills-oriented and reflective approaches, alongside a relative scarcity of collaborative and institutionally supported professional development pathways. This pattern provides an empirical basis for examining professional development as a mediating condition in teachers' role transformation and identity negotiation, as analysed in subsequent sections.

What constrains professional development in AI contexts: ecological constraints

Beyond identifying professional development sub-themes under the third research question (Table 4; Figure 6), the reviewed studies indicate that teachers' professional development in contexts where artificial intelligence is integrated is shaped by interacting ecological constraints across system, institutional, and individual levels. These constraints help explain a recurring pattern in the literature: while tool-oriented training and reflective or ethical learning are frequently reported, more structurally embedded forms of professional development, such as curriculum-integrated pathways or sustained collaborative models, remain comparatively rare.

At the system level, professional development is commonly framed through policy rationalities emphasising readiness, competence, and innovation. Conceptual and review-based studies show that such rationalities translate professional learning into skills-oriented agendas, foregrounding technical capability while positioning ethical understanding as an accompanying requirement tied to governance and accountability (Brandão et al., 2024; Mikeladze et al., 2024; Tan et al., 2025; Zhai, 2024). As a result, professional development is often shaped by dual pressures: meeting demands for technical upskilling while simultaneously responding to emerging ethical and legitimacy concerns.

Institutional mediation further conditions how these pressures are enacted. Where artificial intelligence-related learning is formally embedded within teacher education programmes or supported through curriculum alignment and organisational structures, professional development tends to appear more coherent and sustainable (Chung & Jeong, 2024; Moorhouse et al., 2024; Pokrivcakova, 2023). In contrast, studies report that when institutions promote adoption without integrating professional learning into workload arrangements, assessment systems, or pedagogical design, professional development becomes fragmented and risk-managed, reinforcing short-term, tool-focused training rather than sustained growth (Varsamidou, 2024; Duan & Zhao, 2024; Luo & Zou, 2024). Institutional support also shapes the viability of reflective learning, which is enabled when learning communities and leadership structures are present, but marginalised when professional development is confined to technical workshops (Chamo, 2024; Zawacki-Richter & Naidu, 2024).

At the individual level, professional development is closely linked to teachers' perceived competence, emotional readiness, and capacity to engage with uncertainty. Studies on pre-service teachers emphasise confidence-building and operational familiarity, whereas in-service teachers' learning

increasingly involves reflective engagement as pedagogical and ethical tensions emerge in practice (Lan, 2024; Satvati et al., 2023; Zaman et al., 2024). However, emotional strain, workload pressure, and institutional ambiguity are frequently reported as limiting teachers' ability to sustain deeper professional learning. Under such conditions, competence demands may intensify rather than reduce uncertainty, rendering professional development needs simultaneously technical and affective (Luo & Zou, 2024; Duan & Zhao, 2024). Consequently, individual agency in professional development remains ecologically bounded, expanding in supportive environments but constrained where risk, workload, and unclear expectations dominate (Zhai, 2024).

How professional learning evolves: developmental pathways and adaptive trajectories

Beyond identifying professional development sub-themes (Table 4; Figure 6), the reviewed literature suggests that professional learning in artificial intelligence-enhanced education follows adaptive and non-linear trajectories rather than a uniform sequence. Across empirical, conceptual, and review-based studies, professional development is portrayed as a process shaped by institutional conditions, technological demands, and teachers' evolving professional concerns (Celik, 2022; Tan et al., 2025; Zhai, 2024).

Across contexts, professional learning most commonly begins with recognition of knowledge gaps and an initial emphasis on tool-oriented upskilling. Studies focusing on preparedness and competence-building describe early professional development as acquiring practical skills for teaching and assessment with artificial intelligence applications, often driven by rapid technological change and institutional expectations (Varsamidou, 2024; Pokrivcakova, 2023; Duan & Zhao, 2024). However, the literature consistently indicates that progression beyond this stage is contingent rather than automatic, particularly when professional development remains isolated from sustained pedagogical support.

With increased exposure to artificial intelligence-mediated practice, some studies report a shift toward reflective professional learning. In these accounts, professional development involves interpreting pedagogical consequences, negotiating professional meaning, and recalibrating instructional judgement under conditions of uncertain role boundaries (Lan, 2024; Zawacki-Richter & Naidu, 2024). Reflective practice is thus framed as an adaptive response that supports professional coherence when teachers must evaluate technological outputs within disciplinary, ethical, and contextual constraints (Satvati et al., 2023; Zaman et al., 2024).

A smaller but recurring strand of the literature frames professional development in terms of ethical professionalisation. As artificial intelligence becomes embedded in assessment, feedback, and knowledge production, professional learning increasingly extends beyond technical use toward responsibility, transparency, and accountability (Brandão et al., 2024; Mikeladze et al., 2024; Shao & Sun, 2025). Importantly, this ethical orientation is typically described as coexisting with, rather than replacing, technical competence-building, resulting in layered professional development trajectories.

More collaborative and structurally embedded pathways, such as curriculum-integrated professional learning or co-teaching models, are reported far less frequently. While intervention-oriented and teacher education studies suggest that programme-level integration can support deeper pedagogical engagement, their limited presence in the evidence base indicates that such pathways remain uneven and weakly institutionalised (Moorhouse et al., 2024; Wu et al., 2025).

Across studies, professional development trajectories are further portrayed as contingent and potentially reversible. Tool-oriented learning may stagnate when professional development is framed as compliance rather than growth, while reflective and ethical engagement may narrow under intensified workload and accountability pressures without corresponding institutional support (Celik, 2022; Luo & Zou, 2024; Zhai, 2024). Overall, the literature conceptualises professional learning in artificial intelligence-enhanced contexts as a negotiated and adaptive process shaped by ecological conditions rather than a predictable progression.

DISCUSSION AND IMPLICATIONS

Explaining Emergent Patterns and Advancing a Systemic Understanding in AI-Enhanced Educational Contexts

Across the reviewed studies situated in AI-enhanced educational contexts, three recurring patterns emerge: differentiated instructional role transformation, persistent professional identity tension, and a predominance of professional development focused on tool use and ethical awareness rather than structurally embedded pedagogical change. These patterns do not arise randomly. Instead, they reflect interacting ecological conditions specific to English language teaching contexts where artificial intelligence mediates instructional processes.

At the system level, several conceptual and review-based studies highlight that artificial intelligence is framed through discourses of efficiency, innovation, and competence readiness, which implicitly reassign instructional functions such as feedback provision, assessment support, and content generation to technological systems (Zhai, 2024; Zhai et al., 2021; Tan et al., 2025). Within such policy and scholarly narratives, teachers are positioned as adopters and regulators of artificial intelligence, while professional accountability for learning outcomes and ethical responsibility remains unchanged (Brandão et al., 2024; Shao & Sun, 2025). This structural asymmetry helps explain why role transformation is widely reported but often experienced as incomplete or unstable rather than as a coherent professional shift.

At the institutional level, empirical studies consistently show that schools and teacher education providers mediate artificial intelligence adoption unevenly. While technical encouragement and training opportunities are frequently reported, institutional assessment regimes and curricular structures often remain unchanged, leaving teachers fully responsible for validity, integrity, and learner development (Varsamidou, 2024; Duan & Zhao, 2024; Luo & Zou, 2024). In contrast, contexts where institutions provide structured professional learning, reflective spaces, or formal integration into teacher education programmes appear to enable more constructive role and identity repositioning (Pokrivcakova, 2023; Moorhouse et al., 2024; Lan, 2024). These findings clarify why professional development is concentrated around tools and ethics, while curriculum-embedded or collaborative models remain marginal.

Cultural and pedagogical traditions in English language teaching further intensify identity tension. Multiple qualitative and theoretical studies demonstrate that language teachers' professional authority is historically grounded in feedback mediation, interaction management, and evaluative judgment (Li, 2023; Ulla et al., 2023). Artificial intelligence tools capable of producing fluent output or automated feedback challenge these established sources of legitimacy, leading to identity negotiation rather than straightforward acceptance (Satvati et al., 2023; Zaman et al., 2024; Zhou et al., 2024). Importantly,

this tension reflects contested authority rather than individual resistance, helping explain why anxiety and agency frequently coexist in the literature.

From this perspective, the apparent contradiction between studies emphasising professional anxiety and those highlighting increased agency becomes intelligible. Research reporting heightened anxiety is often situated in accountability-intensive or examination-oriented contexts where artificial intelligence adoption is rapid but pedagogical support is limited (Duan & Zhao, 2024; Luo & Zou, 2024). In contrast, studies documenting enhanced agency tend to describe environments where teachers retain decision-making authority and engage with artificial intelligence through reflective or collaborative practices (Lan, 2024; Mikeladze et al., 2024; Brandão et al., 2024). Related evidence from Malaysian ESL classrooms also suggests that teachers' self-efficacy beliefs shape the extent to which technology-mediated practices are enacted and sustained. Anxiety and agency student responses within AI-enhanced educational ecologies rather than mutually exclusive outcomes.

Taken together, these findings support a systemic interaction model in which instructional roles, professional identity, and professional development are dynamically interrelated. Changes in instructional roles prompt identity negotiation, which in turn shapes how professional learning is interpreted and enacted. This model advances existing research by explaining professional change as a non-linear, ecologically conditioned process rather than a sequence of individual adoption stages.

Implications for English Language Teaching Practice, Theory, and Future Research in AI-Enhanced Educational Contexts

Synthesised evidence suggests that artificial intelligence in English language teaching primarily produces efficiency gains rather than guaranteed pedagogical improvement (Sawangwan, 2024; Varsamidou, 2024). As automated feedback systems and conversational tools increasingly privilege surface accuracy and rehearsed performance, teachers' professional work shifts from content provision towards pedagogical mediation, requiring them to interpret, prioritise, and contextualise AI-generated outputs rather than accept them as authoritative sources of judgment (Brandão et al., 2024; Zhou et al., 2024). This mediating responsibility becomes most pronounced in assessment practices, where artificial intelligence complicates issues of authorship and validity, particularly in writing tasks (Schug, 2025; Zaman et al., 2024). Across the reviewed studies, a shared principle emerges: while formative learning activities may accommodate AI-supported scaffolding, high-stakes assessment requires explicit boundary-setting to preserve professional accountability and assessment integrity.

At a theoretical level, the findings challenge linear assumptions that increased technological competence necessarily leads to professional stability. Teachers may develop operational proficiency with AI tools while continuing to experience identity tension, diminished professional legitimacy, or uncertainty regarding pedagogical authority (Lan, 2024; Eun & Kim, 2024). In AI-enhanced educational environments, authority is not displaced but redistributed and continuously negotiated among teachers, technological systems, institutional expectations, and prevailing pedagogical norms (Li, 2023; Zhong et al., 2023). Identity tension should therefore be understood less as an individual deficiency than as a form of ecological misalignment within technologically mediated teaching systems. Language teacher professionalism is consequently better conceptualised as an ongoing achievement sustained through pedagogical judgment, mediation, and ethical responsibility under technological constraint, shaped jointly by institutional discourse and tool design (Satvati et al., 2023; Zawacki-Richter et al., 2019).

Methodologically, the current evidence base is dominated by cross-sectional perception studies, which constrains understanding of developmental change in teachers' roles and identities. Future research therefore needs to prioritise longitudinal qualitative designs capable of tracing how role adaptation and identity negotiation unfold over time (Ghiasvand & Seyri, 2025; Lan, 2024). Classroom-based observational studies are also necessary to examine how authority, feedback, and assessment practices are enacted in situ, capturing mechanisms that remain invisible in survey-based research (Sawangwan, 2024). Comparative investigations across second-language and foreign-language teaching contexts may further clarify how institutional accountability structures and cultural norms shape teachers' responses to artificial intelligence (Tan et al., 2025; Zhai et al., 2021). Finally, intervention-oriented and design-based research is required to empirically test professional development models that address pedagogical mediation, assessment validity, ethical boundary-setting, and authority negotiation in AI-mediated language classrooms (Brandão et al., 2024; Moorhouse et al., 2024).

CONCLUSION

This systematic literature review examined how artificial intelligence influences English language teachers' instructional roles, professional identity, and professional development. The reviewed evidence shows that artificial intelligence integration is not experienced as a purely technical shift. Instead, it frequently reconfigures professional boundaries and generates identity tension, particularly where institutional expectations for innovation outpace pedagogically grounded support (Lan, 2024; Duan & Zhao, 2024). Across contexts, professional development tends to prioritise immediate tool use, while unresolved demands related to pedagogical judgement, mediation, and ethical boundary-setting persist (Brandão et al., 2024). In response to these patterns, this review proposed a systemic, ecological interaction model that conceptualises role transformation, identity negotiation, and professional development as dynamically interconnected processes shaped by institutional discourse, pedagogical traditions, and technological design (Zhai, 2024). From this perspective, responses such as anxiety and agency, or adaptation and resistance, are better understood as context-dependent outcomes rather than theoretical contradictions (Luo & Zou, 2024; Zaman et al., 2024). Overall, the findings highlight the need to safeguard and rearticulate English language teaching professionalism in artificial intelligence-mediated educational environments, where human judgement and ethical responsibility remain central despite increasing technological mediation.

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APPENDIX A

Characteristics and Thematic Classification of Included Studies

No.	Author(s)	Year	Context / Participants	Research Design	AI-related Focus (as described by authors)	Main Focus Area (s)
1	Pokrivcakova	2023	Pre-service EFL teachers in Slovakia (higher education)	Quantitative survey (KAP)	AI apps; teacher education; training; KAP/knowledge; KAP/attitudes; readiness	Professional Development
2	Varsamidou	2024	Foreign language teachers in Greece (primary & secondary)	Quantitative survey	AI tools; training; time-saving; rapid content creation; plagiarism; job displacement	Instructional Roles; Professional Development
3	Chocarro et al.	2021	Primary and secondary teachers in Spain	Quantitative experiment (TAM-based)	Chatbots; AI apps; TAM:usefulness; TAM:ease of use	Instructional Roles
4	Chamo	2024	Teacher leaders in primary and secondary schools	Qualitative phenomenological study	Teacher leaders' identity development; visibility shapes reflection/reconstruction	Instructional Roles; Teacher Identity; Professional Development
5	Chung & Jeong	2024	Chinese pre-service English teachers (university)	Quantitative survey	ChatGPT; GenAI; writing; grammar; ethics; efficiency; over-reliance; privacy; critical thinking; academic integrity	Instructional Roles; Professional Development

No	Author(s)	Year	Context / Participants	Research Design	AI-related Focus (as described by authors)	Main Focus Area (s)
6	Derakhshan et al.	2020	Iranian EFL teachers in private institutes	Quantitative survey (SEM)	Needs and views of educational research	Teacher Identity
7	Lan	2024	Chinese university teachers	Mixed-methods case study	AI-enhanced; PD; training; identity; identity tensions	Instructional Roles; Teacher Identity; Professional Development
8	Satvati et al.	2023	Iranian language teachers	Qualitative narrative inquiry	AI integration; identity; ecological levels	Teacher Identity; Professional Development
9	Zaman et al.	2024	Teachers and students in Pakistani higher education	Qualitative phenomenological study	ChatGPT; identity; roles; over-reliance; critical thinking	Instructional Roles; Teacher Identity; Professional Development
10	Butarbutar	2024	Prior studies in language learning and teaching	Narrative literature review	AI language apps; planning; assessment; feedback; efficiency; personalization; immediate feedback	Instructional Roles
11	Xiaolin Li	2023	EFL teachers (theoretical discussion)	Theoretical review	professional identity, agency, and positioning to interpret teacher change relevant to technology/AI-mediated contexts	Teacher Identity
12	Luo & Zou	2024	K–12 English teachers in China	Mixed-methods (scale development, SEM)	flipped teaching; technology; identity; anxiety	Instructional Roles; Teacher Identity; Professional Development
13	Zhai et al.	2021	AI in education research (2010–2020)	Systematic literature review	General AI; mapping; assessment; feedback; trends/challenges	Instructional Roles
14	Hieu, H. H., & Thao, L. T.	2024	Vietnamese tertiary-level EFL teachers (9 teachers from two universities)	Qualitative study using semi-structured interviews and thematic analysis	ChatGPT; lesson prep/design; activity design; reliability; accuracy; over-reliance	Instructional Roles; Teacher Identity; Professional Development
15	Celik	2022	K–12 pre-service and in-service teachers	Systematic literature review	General AI; planning; implementation; assessment; automated scoring; feedback; reliability; infrastructure	Instructional Roles; Teacher Identity; Professional Development
16	Ulla, M. B.; Perales, W. F.; Busbus, S. O.	2023	Thai university EFL context; 17 EFL teachers at a Thai university (all on one campus), with 3 of them	Qualitative descriptive study based on an online interview survey plus follow-up	ChatGPT; lesson preparation; activity design; time-saving; reliability; over-reliance	Instructional Roles; Teacher Identity

No	Author(s)	Year	Context / Participants	Research Design	AI-related Focus (as described by authors)	Main Focus Area (s)
17	Eun & Kim	2024	taking part in follow-up individual interviews. Korean English teachers (K-12)	semi-structured individual interviews. Mixed-methods study	AI literacy; AI-TPACK; identity; teacher efficacy; competence AI-assisted; identity construction; roles (facilitator); institutional support; challenges/opportunities	Instructional Roles; Teacher Identity
18	Zhou et al.	2024	Chinese tertiary EFL teachers	Qualitative interview study	AI apps; autonomy; online-teaching PD; burnout; emotional exhaustion	Instructional Roles; Teacher Identity
19	Duan & Zhao	2024	Chinese high school teachers	Quantitative quasi-experimental study	ChatGPT; Twitter; discourse analysis; roles (facilitator/curator); identity; -academic integrity	Instructional Roles; Teacher Identity; Professional Development
20	Zhong et al.	2023	Social media discourse on education (Twitter)	Qualitative discourse analysis	competence frameworks; AI literacy; pedagogy; ethics; data literacy	Instructional Roles; Teacher Identity
21	Mikeladze et al.	2024	Educators (conceptual frameworks)	Critical literature review	GenAI; role continuum; agency; adopter→adapter→innovator	Instructional Roles; Teacher Identity; Professional Development
22	Zhai, X.	2024	Teachers (conceptual discussion)	Conceptual/theoretical study	GenAI; PD needs; AI literacy; ethics; human-AI collaboration design	Instructional Roles; Teacher Identity; Professional Development
23	Brandão et al.	2024	Prior studies on teacher education	Integrative literature review	ChatGPT-3.5; writing revision; +efficiency; teacher role boundaries; -integrity risk	Instructional Roles; Professional Development
24	Sawangwan	2024	Thai EFL undergraduates	Mixed-methods intervention study	AI use; roles (facilitator/curator); identity; tensions; human-centred values	Instructional Roles
25	Ghiasvand & Seyri	2025	Iranian EFL teachers	Qualitative phenomenographic study	GenAI; teacher training; competence development; ethical readiness; classroom experimentation	Instructional Roles; Teacher Identity
26	Moorhouse et al.	2024	Pre-service language teachers (Hong Kong)	Mixed-methods intervention study	systematic review; AI in teaching; teacher PD; competencies; training formats	Instructional Roles; Professional Development
27	Tan et al.	2025	Prior empirical studies on teachers	Systematic literature review (PRISMA)		Instructional Roles; Teacher Identity; Professional Development

No .	Author(s)	Year	Context / Participants	Research Design	AI-related Focus (as described by authors)	Main Focus Area (s)
28	Wu et al.	2025	Student language teachers in online teaching	Qualitative case study	online teaching; PD; community of practice; emotion regulation;	Instructional Roles; Teacher Identity; Professional Development
29	Ulla et al.	2024	Thai university EFL teachers	Qualitative narrative inquiry	digital; online teaching; identity (AI-related context)	Instructional Roles; Teacher Identity
30	Alam et al.	2024	Bangladeshi university EFL teachers	Qualitative case study	technology-enhanced; digital; identity	Instructional Roles; Teacher Identity
31	Lai & Jin	2021	Chinese university EFL teachers	Quantitative study (SEM)	technology integration; identity orientations; integration patterns (AI-related context)	Instructional Roles; Teacher Identity
32	Shao & Sun	2025	Teachers (conceptual discussion)	Conceptual qualitative analysis	AI-driven educational change ; instructional authority/role expectations; identity tensions; new professional learning demands	Instructional Roles; Teacher Identity; Professional Development