

Re-centring Teacher Cognition in the Age of Generative AI: A PRISMA-informed Review of TESOL Research

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Abstract

Generative artificial intelligence (GenAI) has rapidly entered TESOL classrooms, yet the evidence base remains fragmented and often treats teachers as peripheral adopters rather than central decision-makers. This scoping review maps research published between January 2023 and September 2025 on TESOL/EFL teachers' engagement with GenAI through a teacher cognition lens (beliefs, knowledge/AI literacy, decision-making, identity, and affect). Following PRISMA-ScR guidance, the authors searched Scopus, screened records against PCC eligibility criteria, and synthesised 47 eligible publications using a theory-led narrative synthesis. Five recurring patterns emerged: conditional acceptance tied to pedagogical value and ethical feasibility; triadic AI literacies (conceptual, procedural, ethical); pragmatic classroom heuristics that permit ideation while demanding process evidence; a shift towards process-oriented assessment practices (e.g., iterative drafting, oral defences, version control); and evolving professional roles shaped by professional development and policy clarity. The corpus is dominated by self-report designs and uneven procedural reporting. We conclude with implications for targeted professional development, assessment protocols that operationalise transparency, and policy development attentive to teachers' situated judgement.

Keywords: teacher cognition, generative artificial intelligence, TESOL, AI literacy, professional development, assessment integrity, scoping review

1. Introduction

Artificial intelligence (AI) has quickly become a prominent topic in education discussions, shifting from a niche interest to a central focus. The rise of generative tools like ChatGPT, Bard, and other large language models (LLMs) has had a significant impact on language education (Davoodifard & Eskin, 2024). Educators and learners now use these tools to generate fluent texts, create practice exercises, assist with revisions, and even engage in conversations in English. Initial research mainly explored the technical capabilities of these tools and their potential to boost student engagement (Li et al., 2025). Recently, however, both researchers and educators have recognised that the real influence in classrooms hinges on teachers. Since teachers decide how, when, and under what circumstances AI is utilised, their beliefs, decisions, and emotions play a crucial role in shaping its role in TESOL (Zaimoğlu & Dağtaş, 2025).

The idea of teacher cognition, thoroughly explored by Borg (2003, 2006), provides a useful framework for understanding this topic. Teacher cognition encompasses more than just surface attitudes; it includes what teachers know, believe, their professional identities, daily decision-making, and emotional responses. When applying this perspective to AI, several key questions emerge. How do teachers interpret both the opportunities and risks associated with AI? What types of literacies and practical knowledge do they deem necessary (Case et al., 2025)? How do they manage the use of AI in relation to assessment integrity, curriculum objectives, and ethics (Li et al., 2025)? Additionally, how does AI influence teachers' self-perceptions and their perceptions of their work (Satvati et al., 2025)? These questions are especially urgent because policymakers, institutions, and professional associations are still adapting to the fact that AI has already become part of many classrooms.

Although public debate about AI in education is intense, systematic research on how TESOL teachers actually think about and use it remains quite limited. Much of the current literature focuses on attitudes or perceptions, often gathered through surveys and self-reports (Case et al., 2025). Far fewer studies investigate what happens in practice—how teachers integrate AI into lessons or how its use impacts learner outcomes (Zaimoğlu & Dağtaş, 2025). Another issue is geographic imbalance. Many studies originate from East Asia and the Gulf, while fewer explore contexts in Europe, Africa, or Latin America (Li et al., 2025). Without more balanced evidence, there is a risk that discussions of AI in TESOL become shaped by very specific contexts or, worse, by broad generalisations about “digital transformation” that are disconnected from classroom realities. A review focusing on teacher cognition can help by synthesising existing findings, comparing across regions, and identifying recurring patterns with real pedagogical implications.

To date, many syntheses of GenAI in language education map opportunities and concerns at a broad level, but fewer consolidate what is known about how teachers' beliefs, knowledge, emotions, and situated judgement interact to shape classroom practices and assessment decisions. Re-centring teacher cognition therefore offers a principled way to move beyond attitude inventories towards an interpretable account of how GenAI is being domesticated in TESOL. Accordingly, this review addresses three questions: (1) Which teacher-cognition

constructs are foregrounded in recent GenAI-in-TESOL research (beliefs, knowledge/AI literacy, decision-making, identity, affect)? (2) What cross-study patterns are reported in teachers' classroom practices, assessment designs, and professional development needs? (3) What methodological and contextual gaps constrain current claims, and what directions follow for research, policy, and teacher education?

This review aims to do exactly that. It systematically maps research published between 2023 and 2025, focusing on TESOL teachers and AI. The review includes 47 eligible studies from various contexts, covering empirical work, systematic reviews, and conceptual analyses that specifically examine teachers as the primary units of analysis (Li et al., 2025). Viewing these studies through the lens of teacher cognition allows us to see not just what teachers think about AI, but also how these thoughts relate to issues like professional development, assessment design, classroom routines, and identity formation. In this way, the review contributes to three overlapping debates: first, how teachers in applied linguistics adapt to technological innovations (Davoodifard & Eskin, 2024); second, how teacher development literature begins to address questions of AI literacy and lifelong learning (Case et al., 2025); and third, how policy discussions on assessment integrity and the fair use of generative systems need to consider teachers' lived experiences (Satvati et al., 2025).

The article proceeds as follows. Section 1.1 outlines the scope and analytical perspective, positioning teacher cognition as the central interpretive framework. Section 2 describes the methods employed for systematically searching, screening, and synthesising the literature. Section 3 presents the findings, organised into five themes: (1) beliefs and attitudes, (2) professional development and literacy, (3) ethical and instructional concerns, (4) identity and cognition, and (5) emotion and anxiety. Section 4 then discusses the implications for TESOL pedagogy, teacher training, and policy development. The article concludes with recommendations for research, practice, and policy, emphasising that language teachers should not be viewed as passive adopters of AI but as active thinkers, decision-makers, and professionals navigating one of the most significant shifts in education in recent decades.

1.1 Theoretical Framework and Literature Review

1.1.1 Scope and Analytic Lens: Teacher Cognition for AI in ELT

This review examines published AI in TESOL research, especially studies on teacher cognition, including beliefs, knowledge, decisions, assessment, identity, and emotions related to classroom practices (Borg, 2003, 2006). Following Borg (2003, 2006), teacher cognition is a broad concept encompassing teachers' knowledge, beliefs, interpretive resources, identity positions, and emotional evaluations, which influence pedagogical judgements and their application in context. Cognition is considered situated rather than purely attitudinal, influenced by experience and constrained by factors such as policy clarity, assessment procedures, and access to infrastructure. The review defines teacher cognition in five components: beliefs and value judgements; knowledge and skills (such as AI literacy); decision-making and practice; identity; and emotion. These are examined across areas like lesson planning, assessment, and professional development. This framework helped develop the a priori codebook and guided the narrative synthesis of studies. It focuses on recent, peer-reviewed TESOL research, occasionally drawing from related fields such as higher education pedagogy when the concepts are applicable. This method promotes a cohesive synthesis and avoids general 'technology acceptance' narratives.

1.1.2 Beliefs and Value Judgements: Conditional, Principled Acceptance

Across a substantial body of TESOL-related research, teachers tend to express cautious optimism about AI when clear learning advantages and ethical feasibility are evident; elsewhere, reservations are widespread. Perceived capabilities include preparing materials, generating ideas, and orchestrating lessons or feedback, often seen as enhancing efficiency or reach (Babanoğlu et al., 2025; Crompton et al., 2024). At the same time, concerns about accuracy, genre or register appropriateness, privacy, and authorship frequently temper enthusiasm (Crompton et al., 2024; Hartshorn et al., 2023; Papakonstantinidis et al., 2024; Pitychoutis & Al Rawahi, 2024; Turner & Windle, 2019). Overall, acceptance of the technology appears conditional: adoption is more likely where classroom use explicitly aligns with curriculum standards and is linked to credible pedagogic value, and less so where ethical or quality concerns remain unresolved (Babanoğlu et al., 2025; Crompton et al., 2024; Hartshorn et al., 2023; Turner & Windle, 2019).

Two recurring subtleties are evident. Firstly, acceptance appears to be highly sensitive to perceived fit: teachers tend to respond more positively when outputs can be tailored to specific levels, genres, and local expectations, an implicit belief that aligns with Borg's practical theory. Secondly, there are some indications of expectation gaps between teachers and students regarding the extent of AI use for skill development, which might partly explain why some contexts remain cautious (Hartshorn et al., 2023). Overall, these belief patterns appear to influence decisions about where and how AI is integrated into coursework.

1.1.3 AI Literacy for Practice: Conceptual, Procedural, and Ethical

A common theme in TESOL discussions is the shift from basic "tech adoption" to literacy that fosters practical knowledge for principled language teaching. Most descriptions divide literacy into conceptual, procedural, and ethical areas, although emphasis varies by context.

Conceptual literacy concerns teachers' mental models of what existing systems can and cannot do. When these models are clearer, teachers may be better able to predict behaviour and limitations, and plan tasks accordingly (Ng et al., 2021). Some research links a stronger conceptual understanding with diverse learning experiences and increased engagement, although the causal connections are not yet fully understood (Zhang & Miao, 2025; Teng, 2024).

Procedural literacy concentrates on the 'how' of TESOL practice: prompting aligned with ELT objectives, adapting outputs to fit proficiency levels and genres, and documenting AI-mediated processes. Research in writing and interaction indicates that explicit prompt design and

interactional competence with AI may enhance engagement and the quality of drafting, although the effects and longevity of these impacts are variably reported (Huang, 2023; Wang et al., 2024; Teng, 2024). Broader digital literacy is also highlighted as a valuable foundation for integrating and troubleshooting tools in real time (Alzubi, 2024).

Ethical literacy usually covers privacy, bias awareness, attribution/disclosure, and boundaries for fair use. Proposals often view teachers as stewards of responsible practice, advocating for classroom-level frameworks that are understandable for learners and practically applicable within schools (Boscardin et al., 2023; Chu-Ke & Dong, 2024). However, implementation varies widely across different settings.

Professional development (PD) studies indicate that contextualised PD, which incorporates discipline-specific prompts, assessment-aware protocols, and process documentation, correlates with greater perceived control and lower anxiety (Ng et al., 2023; Zhao et al., 2022; Zhang et al., 2025; Zhu & Siquan, 2025). Although the designs and samples differ, this pattern supports a practical knowledge approach to teacher learning, where PD strengthens the link between intentions and classroom actions (Borg, 2006).

1.1.4 Classroom Decision-Making: Proceduralised Heuristics

When beliefs and literacy intersect with daily teaching demands, many accounts describe simple, defensible routines that teachers adopt as proceduralised cognitions. A common pattern is to allow AI for brainstorming or planning while requiring evidence of the process for final submissions (e.g., outlines, intermediate drafts, reflective notes). This routine is often presented as a workable compromise under time, integrity, and policy constraints rather than a fixed end-state (Turner & Windle, 2019; Li, 2017; Johnson & Golombek, 2011). Although not universal, such heuristics seem to stabilise judgement (what is permitted, why, and how it will be checked) and can help mediate the lag between classroom practice and institution-wide policy. Two important caveats should be considered: few studies directly evaluate how these rules impact L2 outcomes, and their applicability probably depends on local assessment methods and tool availability.

1.1.5 Assessment in an AI Era

A growing body of TESOL-relevant work argues, more convergently than conclusively, that evidencing processes are becoming increasingly important for validity in generative systems. Three overlapping design families recur.

1. Process-oriented tasks. Iterative drafting cycles with reflection and feedback are reported to support self-regulation and critical thinking in writing; while results are promising, effect sizes and generalisability remain mixed (Wei, 2023; Zhou & Peng, 2025; see also Teng, 2024).
2. Oral defences. Asking students to account for their decisions can restore interactional authenticity even when AI has been used beforehand; benefits have been observed in engagement and confidence. Much of the detailed guidance originates from related higher education contexts, but the assessment principles are adaptable to EAP/EFL speaking and project-based evaluation (Allen & Williams, 2021; Luan et al., 2020).
3. Versioning and audit trails. Transparent histories of drafts and prompts can make growth trajectories inspectable and support authorship transparency, albeit with added logistical demands (Carcary, 2021).

Taken together, these strategies seem to allow tool use without turning into solely product-focused evaluation. Reports of increased engagement, confidence, and sometimes proficiency are promising, though claims should be adjusted based on skill area and context (Allen & Williams, 2021; Carcary, 2021; Wei, 2023; Zhou & Peng, 2025).

1.1.6 Professional Identity: From Evaluator/Editor to Diagnostician, Modeller, Steward, Orchestrator

Several contributions examine how AI is reshaping teacher identity. Instead of a shift “from teacher to technician,” teachers are often portrayed as taking on roles that are relatively resistant to automation: diagnostician (identifying next steps), modeller (demonstrating strategies and standards), ethics steward (articulating boundaries and disclosure norms), and orchestrator (sequencing task ecologies so that technology supports pedagogy rather than replaces it). Evidence of such shifts is suggestive rather than definitive; nevertheless, some studies suggest that supportive professional development and collegial policy environments may promote “craft enhancement” narratives, while limited support can heighten “role disruption” concerns (Fteiha, 2025; Wang et al., 2024; Yan, 2025). Reports of enhanced rapport and responsiveness often attribute these effects to teachers’ diagnostic use of learner data and interactional patterns, sometimes mediated by AI-generated artefacts (Yan, 2025).

Two points are worth noting. First, many claims about identity rely on self-reports; using longitudinal or ethnographic observation could offer a deeper understanding of how these claims are enacted. Second, the delicate balance between enhancement and disruption appears highly dependent on local factors such as policies, workloads, and student expectations, which makes applying findings across different contexts risky.

1.1.7 Emotion and Appraisal: Contingent Ambivalence and the Role of Supports

Affective profiles are often ambivalent: curiosity and professional pride in using new tools are reported alongside unease about authorship, surveillance, and competence drift (Guo & Wang, 2024; Zhou & Hou, 2024; Xin & Derakhshan, 2025). There is tentative evidence that this ambivalence can change: when PD is clear and collegial and policy guidance is reasonably explicit, anxiety tends to decrease; conversely, ambiguous expectations seem to promote avoidance or minimal compliance routines (Jafari, 2024; Zhao et al., 2022; Zhang et al., 2025). From a control-value perspective, willingness to adopt AI appears to be influenced by both perceived control (knowledge, policy clarity)

and perceived value (pedagogic benefits), although further research is necessary to clarify mechanisms and boundary conditions.

1.1.8 Context and Transferability: Specifying the “Who” and “Where”

The findings are unlikely to be consistent across different groups and regions. Differences between pre-service and in-service teachers, novices and experienced educators, as well as regional factors like policy environments and infrastructure, seem to influence both the beliefs teachers hold and their routines (Johnson & Golombek, 2011; Liu et al., 2023; Derakhshan & Ghiasvand, 2024; Zhou & Hou, 2024; Zhu & Siquan, 2025). Environments with strong support systems, such as professional development, clear policies, and reliable access, generally show more confident experimentation compared to those with fewer resources or mixed signals. In the Gulf Cooperation Council (GCC) countries, ongoing investments in educational technology and AI readiness suggest that institutional conditions may support adoption, especially if local policies include clear disclosure and evidence-based processes (Rütti-Joy et al., 2023). Consequently, claims of universality should be carefully calibrated, and descriptions of “what works” should include specific contextual details.

1.1.9 Gaps in the Literature and Future Directions

Three recurring gaps are evident. Firstly, many accounts rely on self-characterisation of practice; incorporating classroom observation, artefact analysis, and embedded measures would strengthen conclusions about enactment and L2 outcomes. Secondly, beyond writing applications, detailed, task-specific procedures for speaking, pronunciation, and interactional competence are less thoroughly described, although oral defence and interactional guidance provide partial solutions (Allen & Williams, 2021; Luan et al., 2020). Thirdly, the alignment between policy and practice is inconsistent: classroom protocols often precede formal policy, emphasising the need for codified procedures that balance local practicality with fairness and transparency. Each of these gaps is researchable: design-based studies on assessment protocols; longitudinal professional development trials exploring belief revision and identity shifts; and comparative research on policy implementation across programmes and regions.

1.1.10 Synthesis

Overall, the literature generally portrays language teachers as practical theorists who balance pedagogic value with ethical feasibility. Their beliefs are conditional and sensitive to principles; their literacy needs are conceptual, procedural, and ethical; their decisions are guided by heuristics that emphasise process visibility; their assessments increasingly incorporate evidence from processes such as drafting cycles, oral defences, versioning, and audit trails; and their identities are being re-centred on judgement, modelling, stewardship, and orchestration. Although the evidentiary base remains developing in some areas (for example, enactment, non-writing skills, long-term outcomes), the overall trend appears consistent across different contexts. Any transfer of practices from related domains (such as oral defences) should be justified by assessment logic and adapted to TESOL aims.

2. Method

2.1 Design

We conducted a systematic scoping review with narrative synthesis. Reporting followed the PRISMA 2020 statement and the PRISMA extension for scoping reviews (PRISMA-ScR; Tricco et al., 2018). Narrative synthesis was used to integrate heterogeneous designs while enabling theory-led aggregation under Borg’s teacher cognition framework (beliefs, knowledge/AI literacy, decision-making/practice, identity, affect) (Borg, 2003, 2006). Synthesis procedures were guided by established narrative synthesis guidance (Popay et al., 2006) rather than statistical meta-analysis, given the diversity of designs and outcomes.

2.2 Eligibility Criteria

- Population. EFL/ESL/TESOL teachers, whether pre-service or in-service, and teacher educators involved in language education programmes where directly relevant to teacher cognition.
- Concept. AI in language education, specifically referring to generative AI (e.g., ChatGPT), large language models, or tools described as AI; studies must focus on aspects of teacher cognition (beliefs, knowledge/skills, attitudes, emotions, identity, decision-making) and/or report practices (planning, instruction, assessment, professional development).
- Context. Settings related to language teaching and teacher education; cross-disciplinary sources were only eligible if TESOL teacher cognition evidence was explicit or transferable (e.g., oral defences as process evidence).
- Study types. Peer-reviewed empirical studies (qualitative, quantitative, mixed methods) and systematic or analytical reviews involving teachers as the primary analytic unit.
- Time window and language. Publications in English from January 2023 to September 2025.

Units of analysis and data. The units of analysis were published studies meeting the eligibility criteria. Where available, we extracted participant and context descriptors reported in those studies (e.g., teacher status, education level, and country/region) and summarised them alongside thematic coding in Table 2.

2.2.1 Exclusions

- Learner-only studies without a substantial teacher cognition component; purely technical AI papers; editorials without an empirical basis; and off-topic domains without a TESOL teacher-cognition bridge.

2.3 Information sources and search strategy

The primary source was Scopus. We iteratively refined a TITLE-ABS-KEY query (Figure 1) to target teacher-cognition, language and AI terms:

Figure 1. Code Query

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TITLE-ABS-KEY
("English as a foreign language" OR EFL OR ESL OR TESOL OR TEFL OR ELT OR "English language teaching" OR "English teacher*")
AND
("artificial intelligence" OR "generative AI" OR "large language model*" OR LLM* OR ChatGPT)
AND
((teacher* OR instructor* OR educator* OR tutor*) W/3 (belief* OR attitude* OR cognition OR knowledge OR identity OR emotion* OR practice OR assessment))
AND PUBYEAR > 2022 AND (LIMIT-TO (LANGUAGE, English))
```

To maximise coverage of TESOL-related work, terms such as TESOL/TEFL/ELT were retained alongside EFL/ESL. Proximity (W/3) was used to identify teacher cognition phrases near 'teacher'. We also examined an author-curated dataset aligned with these criteria (exported from Scopus and harmonised), which served as a recall check. The final corpus comprises 47 publications (2023–2025).

2.4 Study Records, Screening, and Selection

Deduplication occurred during export (DOI/title), followed by a two-stage screening process (title/abstract, then full text) against inclusion and exclusion criteria. Screening was carried out by the lead reviewer; borderline cases were resolved by rechecking the initial criteria and, if necessary, searching the full text for teacher cognition content. Reasons for exclusion were recorded (e.g., no teacher data; outside the timeframe; not AI; not TESOL). A PRISMA-style flow diagram illustrates the selection pathway

2.5 Data Items and Extraction

A structured form was used to record bibliographic details, country/region, context and level, design (qualitative/quantitative/mixed), sample (role/status), instruments or analytic frameworks, and findings directly related to Borg's components (beliefs; knowledge/skills/AI literacy; attitudes/emotions; identity; decision-making/practice), as well as practice domains (planning, instruction, assessment, PD). Extracted records were stored in a shared spreadsheet and versioned to maintain traceability.

2.6 Coding Framework and Synthesis

2.6.1 Codebook

We developed an a priori codebook based on Borg's teacher cognition (2003, 2006) architecture (beliefs, knowledge, decision-making/practice, identity, emotion), with operational indicators for each construct (e.g., "conditional acceptance" → beliefs; "discipline-specific prompting" → knowledge/skills; "allow for brainstorming/require process evidence" → decisions/assessment). The codebook also included practice tags (planning, instruction, assessment, PD) to capture enactment sites.

2.6.2 Procedure

After piloting on a small subset to refine code definitions, the lead reviewer coded all included studies, writing analytic memos and maintaining an audit trail (versioned codebook and decisions log). Studies could be assigned multiple codes (e.g., beliefs + ethics; knowledge + assessment). Given the heterogeneity of designs and outcomes, we employed narrative synthesis with constant comparative reading to identify convergence and divergence and to develop thematic groupings. This resulted in five cross-study categories (Beliefs & Attitudes; Professional Development & Literacy; Ethical & Instructional Concerns; Identity & Cognition; Emotion & Anxiety) that structured the Results. Our synthesis prioritises conceptual patterns in how teacher thinking is represented over detailed methodological meta-analysis, aligning with the corpus and review objective (Popay et al., 2006).

2.7 Quality Appraisal

We appraised empirical studies using the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018), applying design-specific criteria (qualitative; quantitative descriptive; RCT/quasi-experimental; mixed methods). Ratings were used descriptively to inform interpretation (e.g., sampling adequacy; instrument validity; analytic coherence); we did not exclude studies solely based on appraisal results nor calculate pooled scores. Conceptual or review pieces were not appraised with MMAT but were included for context (Table 1).

Table 1. MMAT Design Categories and Interpretive Guide

Design band (MMAT)	Typical data sources	Frequent strengths (MMAT-informed)	Common concerns/risks (MMAT-informed)	How to read in this review
Qualitative (e.g., interview/focus group/observation)	Semi-structured interviews, focus groups; sometimes artefacts	Clear research questions; data collection aligned with aims; rich verbatim evidence supporting interpretations	Limited triangulation; sparse reporting on researcher positionality; sampling by convenience	Interpret patterns cautiously; privilege thick description and transparent analytic links
Quantitative descriptive (surveys, correlational, cross-sectional)	Online/onsite teacher surveys; platform logs (occasionally)	Large samples relative to setting; clear constructs; basic reliability reported	Non-probability sampling; self-report measures without validation; limited handling of missing data	Treat associations as indicative; avoid causal language; consider measurement limits
Mixed methods (QUAL+QUAN with integration)	Survey + interviews/focus groups; sometimes classroom artefacts	Rationale for mixing; alignment of components to questions; complementary insights	Limited integration at analysis/interpretation; sampling frames differ across strands; uneven reporting of quality in each strand	Focus on convergence/divergence across strands rather than on pooled effects
Other (reviews/conceptual pieces; not appraised with MMAT)	Narrative or scoping reviews; conceptual analyses	N/A (not MMAT-appraised)	N/A (not MMAT-appraised)	Use to frame context/explanations, not as evidence of effect

2.8 Risk of Bias, Limitations, and Reflexivity

At the corpus level, risks include self-report predominance (surveys/perceptions), variability in sampling and instrument quality, and uneven reporting depth for AI procedures, which led to our cognition-focused, narrative synthesis rather than effect aggregation. Screening, extraction, and coding were performed by the lead reviewer; to reduce single-reviewer bias, we (i) documented inclusion/exclusion decisions, (ii) maintained an audit trail, and (iii) grounded interpretation in pre-specified constructs (Borg, 2006) rather than emergent labels alone. The harmonised dataset is thematic (Title, Summary, Theme, Journal), so methodological profiling is necessarily coarser than in reviews based on full-text re-extractions for each datum; this constraint influences the way results are reported.

2.9 Ethics

This review synthesises published sources only; no new human participant data were collected. Ethical approval was therefore not required.

2.10 Data Presentation

Table 2 summarises study characteristics by theme, citation, venue, and provides a brief indication of each contribution to teacher cognition.

Table 2. Summary of Studies

Theme	Author(s)	Title	Summary	Source
Emotion & Anxiety	Seyri Ghiasvand (2025)	“Teaching is basically feeling”: Unpacking EFL teachers’ perceived emotions and regulatory strategies in AI-powered L2 speaking and writing skills instruction.	Explores how EFL teachers experience and regulate emotions when using AI tools in L2 speaking and writing instruction.	<i>Computers and Education Open</i>
Emotion & Anxiety	Liu & Chang (2024)	Exploring EFL teachers’ emotional experiences and adaptive expertise in the context of AI advancements: A positive psychology perspective.	Analyses how emotional resilience supports EFL teachers’ adaptation to AI integration in teaching.	<i>System</i>
Emotion & Anxiety	Ilhan (2025)	Motivation to teach and AI anxiety among TESOL student-teachers with degree-year and gender differences.	Investigates how AI-related anxiety differs by gender and degree level among TESOL student-teachers.	<i>LLT Journal</i>

Emotion & Anxiety	Shen & Guo (2024)	“I feel AI is neither too good nor too bad”: Unveiling Chinese EFL teachers’ perceived emotions in generative AI-mediated L2 classes.	Presents nuanced emotional responses of teachers toward generative AI in their language instruction.	<i>Computers in Human Behavior</i>
Identity & Cognition	Zhou et al. (2024)	Digital echoes: Crafting Chinese EFL teacher identity in the era of AI-enhanced instruction—A qualitative exploration.	Explores the formation of teacher identity amidst AI-enhanced language education environments.	<i>Forum for Linguistic Studies</i>
Identity & Cognition	Satvati et al. (2025)	AI Integration into language education and teacher identity: An ecological perspective.	Adopts an ecological lens to examine identity transformation among EFL teachers integrating AI.	<i>Language Teaching Research Quarterly</i>
Identity & Cognition	Arslan (2025)	English-as-a-foreign language university instructors’ perceptions of integrating artificial intelligence: A Turkish perspective.	Highlights Turkish EFL instructors’ shifting professional roles and identities due to AI use.	<i>System</i>
Beliefs & Attitudes	Alruwaili & Kianfar (2025)	Investigating EFL female Saudi teachers’ attitudes toward the use of ChatGPT in English language teaching.	Surveys Saudi female EFL instructors’ positive attitudes and ethical reservations about ChatGPT.	<i>Forum for Linguistic Studies</i>
Beliefs & Attitudes	Mohebi (2025)	A qualitative study on the integration of AI in education: Perceptions, challenges, and opportunities among selective in-service and pre-service teachers in the UAE.	Presents diverse beliefs of Gulf-based in-service and pre-service teachers on AI integration.	<i>Lecture Notes in Educational Technology</i>
Beliefs & Attitudes	Taqi et al. (2025)	Embracing AI in EFL Classrooms: Between Fears and Needs.	Kuwaiti EFL teachers’ perceptions balance anxieties with clear use-cases; points to context-specific PD and policy.	<i>International Journal of Information and Education Technology</i>
Identity & Cognition	Xie et al. (2025)	Exploring AI literacy and AI-induced emotions among Chinese university English language teachers: The partial least square structural equation modeling (PLS-SEM) approach.	Examines the relationship between AI literacy dimensions and emotional reactions among Chinese university EFL teachers.	<i>International Journal of Applied Linguistics</i>
Identity & Cognition	Nazim & Alzubi (2025)	Empowering EFL teachers’ perceptions of generative AI-mediated self-professionalism.	GenAI use associated with stronger professional identity and reflective development among EFL teachers.	<i>PLOS ONE</i>
Identity & Cognition	Al-Saadi et al. (2025)	Exploring Omani EFL student teachers’ perceptions on fostering critical thinking through ethical use of AI.	Explores how Omani EFL student teachers perceive ethical AI use for fostering critical thinking.	<i>Educational Process: International Journal</i>
Beliefs & Attitudes	Abou Assali (2025)	Bridging the Gap: ESL teachers’ views on AI integration and its impact on language learning.	Reveals generally positive ESL teacher attitudes toward AI, with concerns about its pedagogical implications.	<i>World Journal of English Language</i>

Beliefs & Attitudes	Hieu & Thao (2024)	Exploring the impact of AI in language education: Vietnamese EFL teachers' views on using ChatGPT for fairy tale retelling tasks.	Details how teachers perceive ChatGPT as a creative tool in language learning despite instructional concerns.	<i>International Journal of Learning, Teaching and Educational Research</i>
Beliefs & Attitudes	Dincer & Bal (2024)	A qualitative journey on instructors' perceptions of artificial intelligence in EFL education.	Narrative study showing teachers' mixed views on AI's impact on classroom roles and assessment.	<i>AI in Language Teaching, Learning, and Assessment</i>
Professional Development & Literacy	Tran et al. (2024)	Transformative interactions: ChatGPT's role in facilitating professional development among Vietnamese English as a foreign language teachers.	Shows how AI tools like ChatGPT contribute to reflection and growth in EFL teacher communities.	<i>Higher Learning Research Communications</i>
Professional Development & Literacy	Guan et al. (2025)	Investigating the tripartite interaction among teachers, students, and generative AI in EFL education: A mixed-methods study.	Mixed-methods study examining how generative AI changes teacher-student dynamics in EFL contexts.	<i>Computers and Education: Artificial Intelligence</i>
Professional Development & Literacy	Omidvar & Meihami (2025)	Exploring the "what" and "how" of opportunities and challenges of AI in EFL teacher education.	Teacher-education lens: specifies pedagogical/digital literacy and infrastructural needs; aligns with AI literacy for practice.	<i>Computers & Education: Artificial Intelligence</i>
Professional Development & Literacy	Chan & Tang (2025)	Evaluating English teachers' artificial intelligence readiness and training needs with a TPACK-based model.	Diagnoses English teachers' AI-TPACK profiles and training gaps; actionable levers for PD design.	<i>World Journal of English Language</i>
Professional Development & Literacy	Rahimi & Teimouri (2025)	Advancing language education with ChatGPT: A path to cultivate 21st-century digital skills.	Outlines how ChatGPT enhances 21st-century teaching skills and reflective practice for language teachers.	<i>Research Methods in Applied Linguistics</i>
Ethical & Instructional Concerns	Aljabr & Al-Ahdal (2024)	Ethical and pedagogical implications of AI in language education: An empirical study at Ha'il University.	Highlights EFL instructors' concerns over academic integrity, AI misuse, and student dependence.	<i>Acta Psychologica</i>
Ethical & Instructional Concerns	Cabrera-Solano et al. (2025)	Enhancing EFL higher education through Fliki videos: An artificial intelligence implementation approach.	In a teacher-education setting, AI-generated videos are associated with higher engagement and comprehension among pre-service teachers.	<i>World Journal of English Language</i>
Ethical & Instructional Concerns	Görgülü et al. (2025)	Investigation of the opinions of classroom teachers working in science and art centers on the pitfalls of artificial intelligence in education.	Investigates fears of job displacement and readiness among classroom teachers using AI.	<i>Pitfalls of AI in Education</i>
Beliefs & Attitudes	Yetkin & Özer-Altunkaya (2024).	AI in the language classroom: Insights from pre-service English teachers.	Pre-service TESOL teachers report mixed attitudes and competence needs; highlights classroom boundary-setting and practical supports.	<i>E-Learning and Digital Media</i>
Beliefs & Attitudes	Zhou & Hou (2024)	Can AI empower L2 education? Exploring its influence on the behavioural, cognitive and	Empirical study showing how AI fosters engagement and optimism among both EFL teachers and learners.	<i>European Journal of Education</i>

		emotional engagement of EFL teachers and language learners.		
Beliefs & Attitudes	Babanoğlu et al. (2025)	Envisioning the future of AI-assisted EFL teaching and learning: Conceptual representations of prospective teachers.	Conceptual exploration of how prospective teachers perceive AI's future role in instruction.	<i>SAGE Open</i>
Professional Development & Literacy	Lo et al. (2024)	The influence of ChatGPT on student engagement: A systematic review and future research agenda.	Includes teacher reflections on ChatGPT-enhanced instructional design and engagement metrics.	<i>Computers and Education</i>
Professional Development & Literacy	Özer-Altinkaya & Yetkin (2025)	Exploring pre-service teachers' readiness for AI-integrated language instruction.	Quantifies AI readiness and perceived competency among language education trainees.	<i>Pedagogies</i>
Professional Development & Literacy	Kohnke et al. (2023)	Exploring generative artificial intelligence preparedness among university language instructors: A case study.	HE English language instructors' readiness, attitudes, and PD needs for GenAI; highlights institutional support as a determinant of uptake.	<i>Computers & Education: Artificial Intelligence</i>
Ethical & Instructional Concerns	Mustroph & Steinbock (2024)	ChatGPT in foreign language education – Friend or foe? A quantitative study on pre-service teachers' beliefs.	Examines pre-service teacher beliefs about ChatGPT's pedagogical and ethical implications.	<i>Technology in Language Teaching and Learning</i>
Ethical & Instructional Concerns	Ali (2024)	University teachers' vantage points on ChatGPT integration in education: Upsides and downsides.	Highlights pros and cons as seen by tertiary-level EFL instructors in multiple disciplines.	<i>Rotura: Journal of Communication, Culture and Arts</i>
Ethical & Instructional Concerns	Neff et al. (2024)	EFL students' and teachers' perceptions of the ethical uses of artificial intelligence tools.	Surveys EFL teachers (and students) on ethical principles and boundaries for classroom AI; informs teacher ethical cognition.	<i>Technology in Language Teaching & Learning</i>
Ethical & Instructional Concerns	Galán-Rodríguez et al. (2025)	Attitudes and perceptions: The role of artificial intelligence in the training of future secondary school foreign language teachers.	Analyses teacher educators' views on AI's value and its ethical ambiguities in training programmes.	<i>Texto Livre - Linguagem e Tecnologia</i>
Beliefs & Attitudes	Prosenjak & Jakupčević (2025)	Attitudes of primary and secondary EFL teachers in Croatia towards the use of AI in classroom settings.	Presents Croatian EFL teachers' attitudes and readiness levels toward classroom-based AI tools.	<i>ELOPE</i>
Beliefs & Attitudes	Mustroph & Steinbock (2024)*	ChatGPT in foreign language education – Friend or foe? A quantitative study on pre-service teachers' beliefs.	Quantitative study of pre-service teachers' beliefs on ChatGPT as a pedagogical asset or liability.	<i>Technology in Language Teaching and Learning</i>
Professional Development & Literacy	Can & Mangır (2024)	Empowering language educators: Integrating artificial intelligence in classrooms and beyond.	Examines the role of AI in expanding teacher agency and digital capacity in EFL settings.	<i>An approach to digitalization in language teaching from different perspectives: A reflection of empirical work.</i>

Professional Development & Literacy	Whalen et al. (2024)	K-12 educators' reactions and responses to ChatGPT and GenAI during the 2022–2023 school year.	Includes perspectives of language teachers on adjusting instruction due to emerging AI tools.	<i>TechTrends</i>
Professional Development & Literacy	Huang et al. (2025)	Developing pre-service language teachers' GenAI literacy: An interventional study in an English language teacher education course.	Intervention in an English teacher-education course; builds GenAI literacy/competence among pre-service language teachers.	<i>Discover Artificial Intelligence</i>
Ethical & Instructional Concerns	Al-Khresheh (2024)	The future of artificial intelligence in English language teaching: Pros and cons of ChatGPT implementation through a systematic review.	Systematic review highlighting EFL educators' views on benefits and risks of ChatGPT in teaching.	<i>Language Teaching Research Quarterly</i>
Ethical & Instructional Concerns	Vierhauser et al. (2024)	Towards integrating emerging AI applications in software engineering education.	While focused on SE, includes cross-disciplinary insights from language educators adapting to AI.	<i>Proceedings of the 2024 International Conference on Software Engineering Education and Training</i>
Ethical & Instructional Concerns	Grą̄eda et al. (2024)	Embracing artificial intelligence in the arts classroom: Understanding student perceptions and emotional reactions to AI tools.	Though student-focused, includes data on teacher responses to classroom AI in the arts context.	<i>Cogent Education</i>
Beliefs & Attitudes	Muthmainnah et al. (2024)	Shaping artificial intelligence-perceived hybrid learning environment at university toward the global talent development strategy.	Examines how EFL teachers and institutions approach AI to align with global talent strategies.	<i>AI-oriented competency framework for talent management in the digital economy: Models, technologies, applications, and implementation</i>
Beliefs & Attitudes	Xin & Derakhshan (2025)	From excitement to anxiety: Exploring English as a foreign language learners' emotional experience in the artificial intelligence-powered classrooms.	Explores emotional swings among EFL teachers in AI-supported classrooms.	<i>European Journal of Education</i>
Professional Development & Literacy	Delello et al. (2025)	AI in the classroom: Insights from educators on usage, challenges, and mental health.	Addresses mental health and professional strain experienced by teachers adopting AI tools.	<i>Education Sciences</i>
Ethical & Instructional Concerns	John (2025)	Exploring the impact of artificial intelligence on language acquisition, linguistic development, and language use: A case study from India.	Includes EFL teacher reflections on how AI is shaping linguistic development and classroom use.	<i>Forum for Linguistic Studies</i>
Beliefs & Attitudes	Ali (2024)	University teachers' vantage points on ChatGPT integration in education: Upsides and downsides.	Captures university language instructors' views on both the benefits and disruptions of ChatGPT.	<i>Rotura: Journal of Communication, Culture and Arts</i>
Professional Development & Literacy	Al-Saadi et al. (2025) *	Omani EFL student teachers' perceptions on fostering critical thinking	Explores the perceptions of Omani student-teachers on AI for critical thinking in EFL.	<i>Educational Process: International Journal</i>

		through ethical use of AI.		
Professional Development & Literacy	Moorhouse et al. (2024)	Developing language teachers' professional generative AI competence: An intervention study in an initial language teacher education course.	PD intervention that builds GenAI competence (conceptual, procedural, ethical) and increases perceived control, after which teachers adopt clearer classroom rules and disclosure/documentation practices.	<i>System</i>

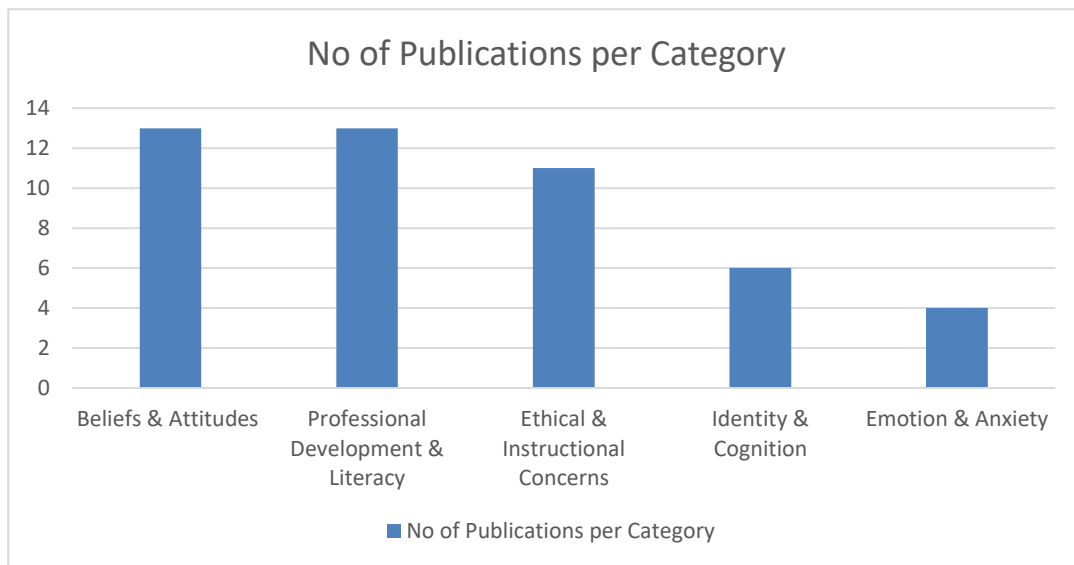
* Studies relevant to multiple themes are counted once for corpus totals

3. Results

3.1 Corpus overview

The final corpus includes 47 empirical and review articles published between 2023 and 2025, each examining TESOL teachers' engagement with AI. Because the dataset was harmonised as a thematic index (Title, Summary, Theme, Journal), the synthesis focuses on conceptual patterns, specifically, how teacher thinking is represented in the literature, rather than detailed methodological profiling. Five categories (Table 3), derived inductively, organise the analysis: Beliefs & Attitudes (n = 13), Professional Development & Literacy (n = 13), Ethical & Instructional Concerns (n = 11), Identity & Cognition (n = 6), and Emotion & Anxiety (n = 4). These categories correspond to core components of teacher cognition, that is, what teachers believe, know, feel, and do, and how these mental constructs influence pedagogical decision-making (Borg, 2003, 2006).

Table 3. Number of Publications for each Category



3.2 Beliefs and Attitudes About AI in Language Teaching

Across a large set of studies (n = 13), teachers articulate evaluative stances toward AI, framing it as both potential affordances and risks for core ELT activities. Typical titles include "Artificial Intelligence in EFL Classrooms: Friend or Foe?", "Female Saudi Teachers' Attitudes Toward ChatGPT", and "AI in Education: Perceptions, Challenges, and Opportunities." The dominant pattern is cautious pragmatism: teachers tend to judge AI in terms of instrumental utility (e.g., idea generation, materials support, time-saving) while expressing conditional acceptance contingent on ethical clarity and assessment redesign.

According to Borg's terms, these are beliefs, "propositions individuals consider to be true," often tacit and based on experience, that influence the interpretation of classroom problems and the choice of strategies (Borg, 2003, p. 81). The literature shows beliefs tend to cluster around: (a) pedagogical potential (AI as a scaffold for planning and drafting), (b) quality concerns (accuracy, stylistic fit, cultural appropriacy), and (c) professional prudence (guarded uptake pending policy guidance). Notably, much of this work remains self-report rather than observation-based; nonetheless, teachers' expressed beliefs are sufficiently patterned to suggest a broad stance of "use with care".

3.3 Professional Development (PD), AI literacy, and Knowledge for Practice

The other large cluster of studies (n = 13) concentrates on knowledge and skills, teachers' AI literacy and their understanding of what competent, ethical use looks like in ELT. Notable entries include ChatGPT's Role in Facilitating Professional Development Among

Vietnamese EFL Teachers, Tripartite Interaction Among Teachers, Students, and Generative AI in EFL Education, and Advancing Language Education with ChatGPT. Here, teacher cognition is seen as practical knowledge (Borg, 2006): situational know-how that links pedagogical intentions to classroom actions.

Two common knowledge issues are evident. First, teachers seek procedural clarity on how to prompt effectively, adapt outputs to proficiency targets, and document AI-mediated processes transparently. Second, they desire ethical literacy regarding data privacy, bias, and attribution with learners. Across studies, teachers frequently report learning-by-doing without comprehensive institutional guidance, which influences their beliefs and emotional responses. In this context, professional development (PD) acts as a mediating factor in teacher cognition: it refines beliefs, stabilises practices, and reduces anxiety when training is specific to discipline, concrete, and assessment-aware.

3.4 Ethical and Instructional Concerns: Cognition at the Edge of Practice

Eleven studies focus on ethics-inflected instructional dilemmas, with titles such as Ethical and Pedagogical Implications of AI in Language Education, Skill Obsolescence and Educator Readiness, and ChatGPT in Foreign Language Education, Friend or Foe? These papers highlight teacher decision-making under uncertainty and how to uphold academic integrity while leveraging AI for language learning.

From a cognition perspective, teachers appear to hold conditional rules of thumb (Borg, 2003), such as allowing AI for brainstorming, restricting it for final drafting, and requiring process evidence (e.g., outlines, drafts, oral defences). Many provide contextualised judgements about when AI aligns with curricular aims (e.g., genre awareness, audience adaptation) and when it risks undermining core learning processes (e.g., independent lexical/grammatical development). These are not abstract ethical positions; rather, they are proceduralised cognitions, practical heuristics that reconcile pedagogical values (authenticity, fairness) with emerging tools. Importantly, the studies expose policy and practice gaps: teachers often pre-empt institutional policy by establishing classroom-level protocols, a pattern that both reflects and influences their beliefs.

3.5 Identity, Agency, and Evolving Professional Self-Concept

A smaller but conceptually rich cluster (n = 6) examines teacher identity, through studies such as Digital Echoes: Crafting Chinese EFL Teacher Identity in the Era of AI, AI Integration into Language Education and Teacher Identity, and EFL University Instructors' Perceptions of Integrating AI. Here, the cognitive focus is not just "what teachers think about AI," but who teachers see themselves as because AI becomes part of their practice.

Two patterns of identity emerge repeatedly. One presents AI as a credible assistant, a "second pair of hands" that enhances existing expertise (e.g., curating examples, modelling feedback), supporting a narrative of craft enhancement. The other depicts AI as role-disruptive—potentially replacing evaluative or editorial tasks, leading to a redefinition of teacher authority around diagnosis, modelling strategies, ethics oversight, and orchestration. Both patterns involve cognitive re-framing: teachers redefine what constitutes their unique contribution (judgement, relational work, task design), thereby stabilising practice amid technological change.

3.6 Emotion, Anxiety, and Motivational Appraisals

Four studies explicitly highlight emotions, e.g., Teaching is essentially feeling, EFL Teachers' Emotional Experiences and Adaptive Expertise, and Motivation to Teach and AI Anxiety. The emotional profile is ambivalent: curiosity and professional pride (in utilising new tools) coexist with unease (about erosion of authorship, surveillance, or competency drift). In cognitive terms, emotions serve as appraisals of opportunities and threats that influence attention and strategy choices. Where professional development (PD) is concrete and collegial, anxiety diminishes and exploratory behaviour increases; where ethical or assessment frameworks are unclear, avoidance or minimal compliance patterns tend to emerge. Therefore, the emotional evidence aligns with a control-value appraisal perspective: perceived control (knowledge, policy clarity) and value (pedagogical benefits) together predict teachers' willingness to incorporate AI.

3.7 Cross-cutting Synthesis: How Cognition Manifests Across the Corpus

Taken together, the five categories reveal a coherent cognition system:

- Beliefs: Mostly instrumental and conditional, AI is helpful if it clearly supports language learning processes and can be governed ethically.
- Knowledge: Fragmentary but rapidly progressing; teachers seek discipline-specific professional development (task design, prompt engineering for ELT aims, process documentation).
- Decision-making: Evident in emerging classroom heuristics (what to permit/restrict, how to verify processes), often before formal policy is established.
- Identity: Re-anchored around roles less vulnerable to automation (diagnosis, modelling, ethical curation, relationship-building).
- Emotion: Ambivalence that is adaptable, decreased by supportive professional development and policy, and increased by uncertainty around assessment and integrity.

While many studies employ broad “perceptions” lenses, the patterns clearly align with the beliefs, knowledge, and practice nexus central to teacher cognition (Borg, 2003, 2006). In short, teachers are neither technophiles nor technophobes; they are practical theorists developing locally rational rules for using AI in ways that uphold linguistic development, fairness, and professional purpose.

3.8 Summary of Findings

Overall, the evidence suggests that EFL teachers adopt a cautious, conditional attitude towards AI, accepting it when it clearly supports teaching goals and can be managed ethically. Their sense of control, and consequently lower anxiety, increases when professional development focuses on procedural skills (such as task design, prompting, documentation) alongside ethical awareness (such as privacy, attribution, bias). Ongoing challenges in assessment and academic honesty lead to locally created classroom protocols, with institutional policies often lagging behind teachers’ practices. At the same time, teachers are actively reshaping their professional identities towards judgment-rich, relational, and design-focused roles that resist automation while maintaining pedagogic purpose. Lastly, emotional ambivalence appears variable rather than fixed, influenced by the availability of supportive structures like targeted PD, clear policies, and accessible examples that collectively enable confident, principled adoption.

4. Discussion

This review suggests that EFL teachers show a conditional acceptance of generative AI: their support tends to grow when its use is clearly linked to learning objectives and guided by explicit ethical standards. Nonetheless, concerns remain about issues such as accuracy, genre or register suitability, privacy, and authorship. This trend echoes previous descriptions of cautious pragmatism in TESOL (Babanoğlu et al., 2025; Crompton et al., 2024; Hartshorn et al., 2023; Turner & Windle, 2019), and can be seen as beliefs acting as practical theories within Borg’s teacher cognition model (Borg, 2003, 2006). Essentially, teachers view AI not as a single, uniform technology, but as a collection of context-specific opportunities and risks that must be balanced with pedagogical aims and professional values.

A recurring theme in various studies concerns triadic literacy needs: conceptual understanding, procedural skills, and ethical considerations. The evidence shows teachers want clearer mental models of what AI systems can and cannot do, practical routines for specific tasks, adaptation, and proper documentation, as well as classroom-level ethical standards. These developments expand the earlier idea of AI literacy beyond simple “digital competence” (Ng et al., 2021; Zhang & Miao, 2025; Huang, 2023; Wang et al., 2024; Alzubi, 2024; Boscardin et al., 2023; Chu-Ke & Dong, 2024). Additionally, reports show that contextualised professional development (PD) is linked to greater perceived control and less anxiety (Zhao et al., 2022; Ng et al., 2023; Zhang et al., 2025; Zhu & Siqian, 2025). This supports the idea that PD facilitates belief change and builds confidence through practice (Borg, 2006).

In practical settings, teachers in the included studies often define beliefs and literacies as procedural heuristics. These include using AI for ideation and brainstorming, while requiring evidence of the process, such as outlines, draft trails, or reflective notes, for summative assessments. This locally rational routine, common within the corpus, explains why consensus tends to focus on straightforward rules: it helps bridge policy delays and workload challenges while ensuring authenticity and fairness. The move towards process transparency also aligns with existing literature practices such as iterative drafting, oral defence, and version control, especially for writing and, with modifications, speaking/EAP (Allen & Williams, 2021; Carcary, 2021; Zhou & Peng, 2025; Luan et al., 2020). Overall, these strategies foster a redefinition of validity in environments saturated with AI, shifting focus from product-based evaluation to traceable learning activities.

Findings on identity and affect introduce a regulatory dimension into the adoption process. Redefining roles such as diagnostician, modeller, ethics steward, and orchestrator highlights that teachers’ roles are judgment-heavy and relational (Wang et al., 2024; Yan, 2025). Ambivalence, characterised by curiosity, pride, and anxiety about issues such as authorship, surveillance, and competence, remains widespread yet appears flexible. When professional development is specific and policies are transparent, anxiety typically decreases, and exploratory practices tend to increase (Guo & Wang, 2024; Zhou & Hou, 2024; Xin & Derakhshan, 2024; Jafari, 2024).

This pattern forms the basis of control and value assessments, revealing why adoption rates vary among similarly organised institutions and regions. The differences observed across different groups and settings highlight the importance of context and transferability. Factors such as variations between pre-service and in-service teachers, institutional policies, and infrastructural conditions likely impact both beliefs and routine practices (Johnson & Golombek, 2011; Liu et al., 2023; Derakhshan & Ghiasvand, 2024; Zhou & Hou, 2024; Zhu & Siqian, 2025).

For the GCC, increased investments in digital infrastructure could support progress, but norms around disclosure and process-evidence likely remain significant constraints (Rüti-Joy et al., 2023). The next logical step is to explicitly formulate claims within specific contexts and assess classroom heuristics through observation, artefact audits, and testing beyond writing, to move from plausible routines to validated practices.

5. Conclusion and Recommendations

This review of 47 studies shows that TESOL teachers neither blindly accept nor outright reject AI. Instead, they approach it cautiously and pragmatically, considering potential benefits such as increased efficiency, engagement, and scaffolding, while also weighing risks related to authenticity, authorship, and fairness (Li et al., 2025). According to Borg’s framework, teacher cognition is a complex network of conditional beliefs, procedural knowledge, situated heuristics, identity negotiations, and emotional responses (Borg, 2003, 2006). Teachers’ attitudes are shaped more by how well AI aligns with pedagogical goals, local assessment standards, and professional norms

than by the technology itself (Borg, 2003, 2006).

Several key insights surface. First, beliefs about AI are highly influenced by context and conditions. Teachers tend to experiment more with AI when its outputs can be customised to match proficiency levels, genres, and curriculum standards; without such alignment, scepticism generally dominates (Tan et al., 2025). Second, AI literacy is now often described as a three-part concept: conceptual (understanding what AI systems can and cannot do), procedural (knowing how to prompt, adapt, and document AI usage), and ethical (understanding how to protect privacy, promote fairness, and disclose AI use) (Case et al., 2025). In different settings, teachers consistently seek professional development that integrates these skills within their specific disciplines (Wu & Miller, 2025; Satvati et al., 2025).

Third, teachers often rely on practical heuristics that weigh policy uncertainties against classroom conditions. For instance, some educators permit AI for ideation but require students to provide evidence of their process for evaluation (Xin, 2024; Zaimoğlu & Dağtaş, 2025). These heuristic rules explain current practices but still need systematic evaluation to assess their impact on L2 learning. Fourth, teachers' professional identities are evolving, increasingly seeing themselves as diagnosticians, designers, ethics guardians, and coordinators—roles that emphasise judgement, creativity, and interpersonal skills (Moorhouse, 2024; Davoodifard & Eskin, 2024). Lastly, emotional reactions remain mixed but are adaptable. Research indicates that supportive professional development and clear policies can help reduce anxiety and encourage experimental engagement (Wu & Miller, 2025).

From these findings, three sets of recommendations follow:

- For practice, teacher education and professional development should concentrate on AI literacy tailored specifically for English language teaching. Broad digital competence frameworks alone are insufficient; teachers need targeted guidance on prompt creation, genre adaptation, transparency in assessment, and ethical issues. Furthermore, professional development should be collaborative and process-driven, enabling teachers to share heuristics, experiment with strategies, and adjust protocols collectively (Wu & Miller, 2025).
- Policy, institutional, and national regulations should link classroom practices with administrative rules. Teachers are already establishing local rules to ensure authenticity and fairness; policymakers ought to support these efforts instead of enforcing strict bans or granting unlimited freedom (Satvati et al., 2025). Effective policies must specify expectations related to disclosure, evidence of processes, and ethical use, making them practical for teachers and clear for students. Moreover, regional differences should be recognised: what is suitable in a well-funded East Asian university might not work in under-resourced environments (Li et al., 2025).
- Research reveals three key gaps. First, most studies depend on self-reports, highlighting the need for more classroom observations, artefact analysis, and longitudinal research (Li et al., 2025). Second, the emphasis is mainly on writing, with less focus on speaking, pronunciation, and interaction (Wang et al., 2025). Third, further research is necessary to examine policy coherence, specifically how classroom heuristics align with institutional policies and whether they lead to measurable learning gains (Case et al., 2025). Employing comparative and design-based research methods can be particularly effective for transitioning from theoretical approaches to validated, evidence-based practices.

This review highlights that language teachers are active practitioners and theorists who create principled approaches to integrating AI. They are not merely passive users of technological advancements but actively shape how AI aligns with pedagogy, ethics, and their professional roles (Moorhouse & Kohnke, 2024; Davoodifard & Eskin, 2024). Recognising teachers as key interpreters of AI in TESOL is vital to ensure that technology supports learning rather than overpowers it. Future progress relies on equipping teachers with the knowledge, policies, and research evidence necessary to sustain linguistic development and maintain their professional integrity in the age of AI.

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Data sharing statement

No additional data are available.

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