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Artificial Intelligence in TESOL: Opportunities, Challenges, and Future Directions

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Abstract

This systematic scoping review presents an investigation of how and in what ways artificial intelligence (AI) has impacted Teaching English to Speakers of Other Languages (TESOL) during the period 2020 to 2025. This systematic scoping review is based on 110 peer-reviewed articles extracted from premier academic databases to synthesize both empirical, review-based, and critical literature to unearth broader trends in language education that have been led by or altered by AI. The findings reveal that there are four major areas that have presented new avenues. AI-based tutoring and feedback platforms have increased access to language practice. AI-based adaptive learning systems and analytics have made it possible to provide personalized learning options based on students' language skills. Generative AI technology has assisted with maximizing flexibility in designing instructions. Moreover, AI-based mobile and multimodal platforms have also improved language learning access to English. On the other hand, the review points out that there are four clusters of challenges that are interrelated. These challenges include the risks of automated feedback systems to pedagogy due to a lack of grounding in theory; equity challenges posed by digital divides and algorithmic biases; challenges about the roles of teachers, their professional preparedness, and identity; and ethics of privacy, surveillance, and academic honesty. As pointed out by the review, the inclusion of AI in TESOL learning requires a human-centric focus. It is asserted that AI can make a significant difference to TESOL learning only if it is implemented through partnerships between TESOL teachers and AI systems.

1. INTRODUCTION

Recently, there has been increased use of artificial intelligence (AI) solutions moving from the fringes of learning technology towards becoming more mainstream and predominant within language learning. In Teaching English to Speakers of Other Languages (TESOL), there has been

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increased application of AI technologies such as dialogue systems, automatic essay assessors, intelligent learning systems, and immersive systems that continue to largely influence classroom learning, forms of assessment, and learning and teaching interactions (Adeshola & Adepoju, 2024; Case et al., 2025; Crompton et al., 2024). Such developments continue to create tremendous expectations and concerns about learning and teaching.

The rapid embrace of AI in teaching and learning in TESOL is linked to three interrelated incidents. For instance, the global COVID-19 crisis has resulted in a historical transformation in teaching processes to online and blended learning, forcing all teachers to resort to modern digital tools within educational processes to facilitate learning indirectly. In this challenging moment, AI-based teaching assistants, feedback tools, and data analytics have demonstrated possible scalability for teaching and learning processes that could not be conducted physically (Grassini, 2023; Montenegro-Rueda et al., 2023). Secondly, an important qualitative improvement in AI was brought about by large language models (LLMs), allowing both interaction and response in the context of meaningful sentences rather than rule-based coding for individual tasks like correcting grammar. These new AI-based technologies have led to complete paradigm shifts in practices in speaking and interacting in target languages while raising important questions about accuracy and critical intelligence (Aptyka et al., 2025; Birhane & McGann, 2024; Li et al., 2025). Thirdly, there has been a new orientation towards using AI for equity in extending access to English education in countries or communities where there is limited access to qualified teaching professionals and resources, as well as limited availability and opportunity to engage with English (Afzaal et al., 2024; Alam, 2021; Neupane et al., 2025).

In this light, research on AI in TESOL has grown rapidly. The range of instructional tools investigated included chatbots and automated writing evaluators, while pedagogical approaches involved such aspects as AI-supported task design. Other points which have also been investigated are those of learners in relation to motivation and autonomy, as well as emerging teacher perspectives in AI-supported learning environments (Busso & Sanchez, 2024; Case et al., 2025; Ciampa et al., 2023). Moreover, recent scholarship in tandem with classroom-based studies has begun to express concern about privacy, bias, and academic integrity (Chen et al., 2022; Nguyen et al., 2023; Yan et al., 2023). The rapidity and complexity of this emerging body of work have, to date, obstructed any attempt to integrate an appreciation of what, in sum, has impacted upon practice in TESOL through AI.

Although there have been several reviews written about the use of AI in language learning, there are still many that either antedate the post-pandemic explosion of LLMs or are limited to only discussing one aspect/concept of AI. Although recent literature draws attention to the rapid emergence of Generative AI and Large Language Models in TESOL, such trends can only implicitly be understood if placed in the historical trajectory of technology-mediated second language learning as a whole. The CALL tradition, initiated in the early days of computer-mediated second language education, set the basis for the use of technology in second language education, articulating a set of precepts in which the use of technology in second language education should play a supporting, rather than a primary, role in second language education, irrespective of the technology itself (Chun, 2003; Levy, 1997). The CALL literature further continued to explore the use of technology for interaction, practice, and evaluation in second language education (Chapelle, 2006; Warschauer, 2000). Parallel to CALL research, research interest in Artificial Intelligence in Education and ITS focused on how adaptive technology might be applied to model learner knowledge and deliver individualized feedback and formative assessment (VanLehn, 2011; Woolf, 2010). These early research areas prioritized personalization and feedback—two areas that remain at the forefront of modern research in TESOL and AI.

Perhaps most importantly for researchers and developers working at the nexus of language and technology, theoretical understanding from second language acquisition theories—primarily from interactionist and sociocultural theories—enables researchers to fully assess both the utility and limitations inherent to technology-mediated language instruction. For example, both interaction hypotheses and output hypotheses propose that meaningful interaction and feedback (among other things) are critical to language development (Lantolf et al., 2014; Long, 1996; Swain, 2005).

Through the theoretical and historical lens provided above, the current generation of AI tools should not be interpreted as a case of a conceptual break but, instead, a continuation of a long tradition of debate between automation/efficiency, personalization/human mediation within the context of TESOL. Placing the current state of AI research into these traditions will enable a theoretically informed interpretation of the consequences of AI within the context of TESOL.

In terms of the existing review studies for this topic, the systematic scoping review presented here extends the existing literature in three significant ways. Whereas the existing literature either primarily focused on the topic of AI generally in language learning or the pre-LLM types of AI, this systematic review specifically examines the post-pandemic explosion of generative AI/LLMs and their implications for the field of TESOL. Second, while previous reviews tend to target specific skills (writing or assessment) or specific tools in isolation, the target of the proposed review takes an integrative approach in analyzing all tools of teaching, practices of teaching, experiences of the learner, and roles of the teacher in an overarching framework. Third, in contrast to previous reviews that target specific applications and benefits within a narrow time frame, the proposed review synthesis of studies culminating in 2025 encompasses reviews and critical studies within the period of 2020 to 2025.

In light of such challenges and opportunities, this systematic scoping review of TESOL and AI makes three distinct contributions. First, whereas previous reviews tended to antedate the recent explosion of interest in gamified and more generic forms of AI-enhanced generative technology, this review will provide a scoping synthesis of TESOL and AI research that spans two critical and transformative years from 2020 to 2025. This is when there had been mass adoption of LLMs for a wide array of purposes and applications. Second, through the use of its inclusive and holistic approach, this systematic scoping review of TESOL and AI will provide a completely novel synthesis of evidence on learning tools and technologies, as well as learning trajectories and pathways, and will hence provide holistic and multi-layered insights into recent transformations within TESOL as a discipline and as a pedagogical and social space. Third, through its historical and theoretical approach, this systematic scoping review of TESOL and AI will provide deeper contextual and historical insights into recent developments within TESOL as a discipline and will also provide an interpretation of developments and transformations within TESOL within older and more established theoretical traditions, such as CALL and second language learning.

In an effort to fill the research gap evident in the existing literature, the following systematic scoping review combines empirical studies and/or reviews conducted in the period from 2020 to 2025. It evaluates the impact of AI on the role of teaching and learning resources in the TESOL profession. With these various works combined in the investigation, the scope of the impact of the technology highlighted in the investigation can thus be understood in the following research questions:

1. What applications of artificial intelligence have shown the greatest promise in TESOL between 2020 and 2025?
2. What pedagogical, ethical, and institutional challenges have teachers encountered in implementing AI in TESOL?

How has AI adoption influenced emerging directions in TESOL research and practice?

2. METHODOLOGY AND DESIGN

A systematic scoping review approach was applied in the study to explore the literature emerging around the use of Artificial Intelligence in relation to Teaching English to Speakers of Other Languages published in the years 2020 and 2025. It should be noted that the approach to the scoping reviews in the study adopted methodical guidelines (Tricco et al., 2018); the main ones were PRISMA-ScR (Tricco et al., 2018). In the case of compiling the results from various research approaches, the methodology of narrative thematic synthesis was adopted (Braun & Clarke, 2006; Thomas & Harden, 2008).

An extensive search was carried out using all the prominent online databases, namely Scopus, ERIC, Web of Science, JSTOR, Springer Link, IEEE Xplore, and Taylor & Francis Online, because these databases encompass a wide span of peer-reviewed studies related to education, applied linguistics, and education technology alike. The AI-related search terms were joined with TESOL-related descriptors in the search query. The search process included backwards and forwards citation searching as well as monitoring citation alerts as of early 2025 to capture both foundational and pioneering works.

The study considered studies published in the English language from January 2020 to June 2025, if they were peer-reviewed journal articles, book chapters, or refereed conference papers specifically focusing on teaching and learning English through AI applications. Purely technical studies, those not undergoing peer review, unrelated to TESOL, and duplicates across databases were excluded. Title and abstract screening followed by full-text review resulted in the inclusion of 110 studies for synthesis.

Data extraction was based on a standardized coding protocol that included bibliographic information, type of AI application, research design, educational context, focal area, key findings, and implications for TESOL. The coding was performed using Excel and NVivo 14. In order to increase reliability, double-coding was performed in a subsample of 30 studies, which resulted in a high intercoder agreement rate (Cohen's $\kappa = 0.89$).

Thematic synthesis then proceeded with iterations through three stages: preliminary coding of study findings, organization of codes into analytically meaningful themes that aligned with the research questions, and interpretive synthesis to identify patterns, divergences, and gaps across the literature. Formal meta-analysis was not conducted due to substantial heterogeneity in study designs and outcome measures.

Although scoping reviews do not require the appraisal of quality, an evaluative assessment was added to enhance interpretive credibility. Studies were analyzed for clarity in design and methodological transparency relevant to TESOL practice. Ethical approval was not required because this review project was based exclusively on work already published; however, every care was taken to observe standards of ethics in respect to citation and reporting.

3. RESULTS

This section will describe the findings of the systematic scoping review of 110 studies that focused on artificial intelligence (AI) within Teaching English to Speakers of Other Languages (TESOL) published from 2020 to 2025. These findings will purposely not be interpreted, as this will be done in the Discussion section.

After carrying out the database search, screening, and evaluation, a total of 110 studies were included in the final synthesis. The included studies varied significantly in terms of the study designs, the educational settings, and the applications of AI in TESOL.

The literature under review adopted different research methodologies. A large number of studies adopted a quantitative research design, followed by studies that utilized both qualitative and quantitative methodologies. Conceptual studies and reviews also made up a large part of the literature under review, considering the investigative and dynamic field of AI studies in TESOL. Table 1 illustrates the distribution of the literature studies according to the research design.

Table 1: Distribution of Included Studies by Research Design (N = 110)

Research Design	Number of Studies	Percentage
Quantitative	45	41%
Qualitative	28	25%
Mixed-methods	20	18%
Conceptual / Review	17	16%

The studies were carried out in different educational settings. The majority of the studies were carried out in higher educational settings. The results show that AI integration in TESOL has also been investigated in higher educational settings. In addition to that, K-12 educational settings as well as informal educational settings were also well represented.

Table 2: Distribution of Studies by Educational Context

Educational Context	Number of Studies	Percentage
Higher Education	50	45%
K–12	30	27%
Informal / Online Learning	30	27%

For increasing the credibility of the synthesis, the methodological quality and transparency of the results reported in the included studies were considered. The quality of the studies was rated as high, medium, or low based on some predefined criteria. It has been found that most studies were rated high and medium, signifying acceptable methodological quality in the most cited literature.

Table 3: Quality Assessment of Included Studies

Quality Level	Number of Studies	Percentage
High	62	56%
Medium	32	29%
Low	16	15%

In terms of the technologies used, a broad spectrum of AI technologies has been researched across the corpus. Large language models, assessment and evaluation of AI-generated writing, adaptive learning systems, speech recognition technology, and chatbots topped the spectrum of technologies widely researched. Of course, others combined two or more technologies.

In conclusion, through descriptive analysis, it is apparent that there is a great deal of variation in terms of methodology and subject area within AI TESOL-related literature spanning

2020 to 2025. These findings will help create parameters of understanding the opportunities and challenges presented through AI TESOL.

Reported Opportunities and Benefits of AI in TESOL

Analysis of the 110 included studies identified four major categories of opportunities associated with the integration of artificial intelligence in TESOL between 2020 and 2025. These categories were consistent across empirical, mixed-method, and review studies, and reflect the dominant areas in which AI was reported to influence language teaching and learning practices.

The four opportunity categories identified were:

(a) AI-aided tutoring and feedback,

(b) individualized and adaptive learning,

(c) task generation and content creation, as well as

(d) accessibility and inclusion.

Each category is presented below in terms of the frequency of its appearance, the range of application, and the documented pedagogic outcome.

AI-Aided Tutoring and Feedback

AI-assisted tutoring and feedback received the most mentions regarding the application of AI technology in TESOL. Many studies revealed the use of large language models, writing evaluators, and speech recognition software to deliver instant feedback outside the classroom.

The outcomes cited spanned enhancements to writing accuracy, practice to improve pronunciation, increases in learners' confidence, and opportunities to further practice languages. The use of the aforementioned tools was predominantly related to writing and speaking language skills, although a number described combined skill use. Reducing teacher workload and providing more frequent feedback rates also featured among the outcomes cited.

Nevertheless, in tandem with these advantages comes the observation of risks with regard to the accuracy of feedback, overdependence upon the automated correction capability of the computer program, or a lack of pragmatic or cultural sensitivity in the responses produced using the computer program.

A brief description of the most frequently used AI tools for tutoring and feedback in the classroom is given in Table 4.

Table 4: Overview of AI-Aided Tutoring and Feedback Tools in TESOL (2020–2025)

Tool / System	Skill Focus	Reported Benefits	Reported Challenges
Large Language Models (e.g., ChatGPT)	Speaking, Writing	Conversational practice, instant feedback, autonomy	Inaccurate feedback, bias, and over-reliance
Automated Writing Evaluators (e.g., Grammarly)	Writing	Error correction, metalinguistic awareness	Limited contextual depth, dependency
Speech-Recognition Tools (e.g., ELSA Speak)	Speaking	Pronunciation accuracy, confidence building	Limited prosodic and pragmatic nuance

Personalized and Adaptive Learning

Personalized learning experiences also emerged as a major promising application found across the sources. A considerable number of sources described AI-based adaptive learning platforms tailored to adapt task difficulty or learning content according to individual students' performance.

Reported benefits included enhanced learner motivation, enhanced self-regulation, enhanced engagement, and enhanced adaptation for a mixed ability setting. The use of AI analytics dashboards was also reported to enable enhanced analysis for identifying areas that need intervention for learning.

Nonetheless, concerns were raised regarding data privacy, learner response to adaptive feedback, and the possibility of fragmented learning experiences with a lack of pedagogical guidance for personalization.

The primary educational benefits associated with the use of artificial intelligence to support personalized learning are listed in Table 5.

Table 5: Core Benefits of AI-Driven Personalized Learning in TESOL

Benefit Area	Example Application	Reported Outcome
Adaptive difficulty	AI-based grammar and vocabulary tasks	Practice within the appropriate proficiency range
Learning analytics	Progress dashboards	Enhanced self-regulation and teacher monitoring
Predictive feedback	Early identification of learning difficulties	Timely instructional intervention

Task Generation and Content Creation

A significant number of studies utilized AI in creating educational assignments. Educational assignments created using AI included reading comprehension assignments, creative language assignments, model texts, writing assignments, and reading assignments.

The benefits reported include less preparation time for teachers, more variety in materials, and improved differentiating skills according to proficiency levels. Reports showed that the involvement of the AI-produced tasks' creative/game aspects engaged the learners.

Concerns associated with task generation included inaccuracies in the outcomes or tasks generated, potential cultural bias, as well as those associated with plagiarism or the overdependence on outcomes generated using AI. A summary and description of AI-based task generation and content generation applications can be seen in Table 6.

Table 6: AI-Supported Task Generation and Content Creation in TESOL

Application Area	Example Tools	Reported Benefits	Reported Risks
Quiz and drill creation	LLMs, AI quiz generators	Scalable practice, differentiation	Superficial tasks, errors
Reading and listening to texts	Generative AI systems	Exposure to varied registers	Cultural bias
Writing prompts and models	LLM-based tools	Scaffolded writing practice	Plagiarism, over-reliance
Creative language tasks	AI co-writing tools	Engagement, vocabulary expansion	Homogenization

Accessibility and Inclusion

Accessibility and Inclusion represented an important theme among the reviewed studies. AI technology found to support students with limited support at various levels, students with disability, and students with anxiety when engaging with people physically.

Outcomes reported were increased English practices outside English classrooms using mobile tutors, multimodal learning support, and de-affective barriers achieved via non-judgmental AI interaction. However, it was reported in studies that the availability of benefits was not equal due to inequalities according to infrastructure availability, internet connectivity, and digital literacy. The significant accessibility role played by AI in TESOL contexts has been summarized in Table 7.

Table 7:AI Contributions to Accessibility and Inclusion in TESOL

Context	AI Support	Reported Benefit
Rural / low-resource settings	Mobile chatbots, offline apps	Increased access to practice
Learners with disabilities	Text-to-speech, phonetic visualization	Multimodal learning access
Anxious or marginalized learners	Anonymous AI interaction	Reduced anxiety, higher participation

Reported Challenges and Limitations of AI In TESOL

In addition to the previously discussed benefits, a number of challenges were pointed out in the integration of artificial intelligence in TESOL by the reviewed studies conducted between 2020 and 2025. The challenges are categorized into four main areas:

(a) pedagogical
(b) equity and access issues,
(c) teacher roles and readiness, and
(d) ethical and data privacy challenges.

Below are the results, which summarize how the challenges have been documented in literature without any interpretation or judgment.

Pedagogical Challenges

The pedagogical challenges were some of the most identified limitations across the reviewed studies. A large number of studies pointed out the problems associated with overdependence on AI systems, reduced interaction among humans, and a lack of alignment between AI use and established second language acquisition principles.

Some of the studies showed that the learners tended to regard feedback or responses provided by AI as authoritative, even though inaccuracies might be present. Other concerns reported were superficial engagement in language tasks, reduction of opportunities for peer interaction, and little development of pragmatic and intercultural competence.

Other findings from the studies noted that at times, integration was made without proper pedagogical frameworks; hence, the actual classroom practices were sometimes inconsistent and had vague instructional objectives.

The key pedagogical challenges as reported across the literature are summarized in Table 8 below.

Table 8: Reported Pedagogical Challenges of AI Integration in TESOL

Challenge	Reported Risk for Learners	Reported Risk for Teachers
Over-reliance on AI feedback	Reduced critical engagement	Weakened interactional pedagogy
Blind trust in AI outputs	Internalization of errors	Difficulty correcting AI limitations
Lack of pedagogical frameworks	Superficial learning practices	Increased instructional uncertainty
Homogenized language input	Limited exposure to diverse Englishes	Reduced curricular flexibility

Equity and Access Challenges

Issues related to equity were also well documented, especially regarding the digital divide and inequities in access to AI-rich materials. Research indicated inequities based on geographical location, the financial support of the institution, and socioeconomic background.

Although the use of AI systems was thought to be scalable and potentially inclusive, their successful application was largely contingent on internet access as well as digital skills. Consequently, many studies found that the integration of AI systems could potentially perpetuate existing inequalities in education rather than alleviate them.

Biases present in large language models were also widely cited. It was found that the AI content was biased towards the mainstream English dialects and the Western way of thinking.

The major equity issues for accessibility in the reviewed literature are identified in Table 9.

Table 9: Equity and Access Challenges Reported in AI-Enhanced TESOL

Issue	Reported Example	Reported Impact on TESOL
Digital divide	Limited device or internet access	Unequal learning opportunities
Institutional inequality	Uneven AI adoption across schools	Stratified learning outcomes
Linguistic and cultural bias	Dominance of Western English norms	Marginalization of local varieties

Teacher Roles and Readiness Challenges

A large number of the studies reported issues regarding teacher preparedness and changing professional roles. Teachers were often portrayed as ill-prepared for the integration of AI tools due to a general lack of training, insufficient guidance from the institution, and uncertainty about how to use these pedagogically.

Concerns about professional identity and the fear of replacement by AI systems were also commonly reported. Simultaneously, studies emphasized an expansion of responsibilities put on teachers, such as curating AI-generated content, mediating learner–AI interaction, and fostering AI literacy.

The reported challenges regarding teacher roles and readiness are synthesized in Table 10.

Table 10: Reported Challenges Related to Teacher Roles and Readiness

Challenge	Description	Reported Implication
Lack of professional training	Limited AI pedagogy knowledge	Ineffective or cautious adoption
Fear of substitution	Anxiety about professional relevance	Resistance to AI integration
Expanded role expectations	Content curation and AI literacy teaching	Increased workload and pressure

Ethical and Data Privacy Challenges

Concerns regarding ethics and data issues were also mentioned in the literature. Risks concerning data gathering, storage, consent, and surveillance in the usage of AI in TESOL settings were pointed out.

Some of the frequently identified concerns include a lack of clarity about data ownership, a lack of transparency in data use, and misuse of learner-created written products and speech samples. Challenges associated with academic integrity include how to distinguish learner-created work from AI-created work.

A summary of the key challenges to ethics and data privacy observed for each of the studies is presented below in Table 11.

Table 11: Ethical and Data Privacy Challenges in AI-Supported TESOL

Ethical Issue	Reported Example	Reported Consequence
Data privacy	Storage of learner voice/text data	Loss of trust, security risks
Surveillance	Continuous activity tracking	Learner anxiety, reduced autonomy
Academic integrity	AI-generated essays	Compromised assessment validity
Data ownership	Reuse of learner data by platforms	Ethical and legal uncertainty

In Conclusion, it would appear that the following themes emerge in the findings regarding the issues with pedagogy, equity, teacher readiness, and ethics that arose in the literature concerning the integration of AI in TESOL between the dates 2020-2025. This offers a qualitative description of the constraints that exist within the literature concerning the subject.

4. DISCUSSION AND CONCLUSION

In this systematic scoping review, the intention has been to explore the extent to which AI has transformed the field of TESOL between the years 2020 and 2025. On the grounds of the outcomes presented under the results section, the following discussion seeks to make use of the results to discuss how and why AI tends to impact the process of foreign language learning and teaching. Rather than cataloging tools, the discussion here focuses on underlying mechanisms, contextual variation, and unresolved trade-offs that define AI's role in contemporary TESOL.

Mechanisms Underlying Reported Benefits

Throughout the literature reviewed for this paper, it seems that the various reported benefits—such as enhanced autonomy, enhanced accuracy, and enhanced motivation—are related to a single mechanism that is the increase in the number of chances for practicing the skill beyond the limitations set by the classroom. The AI tools provide the learner with the opportunity to have

uninterrupted conversations and feedback from the tools without the constraints of time and social presence (Ciampa et al., 2023; Ravšelj et al., 2025).

This goes a long way towards explaining why increments were most clearly observed in such domains as writing proficiency and pronunciation, for which cycles of feedback and repeated rehearsal are a crucial part and parcel. In contrast, increments in such domains as pragmatic skill, intercultural understanding, and discourse subtlety were reported to be observed to a lesser extent. These aspects of language acquisition are so dependent on a situated social interaction and cultural work that current machine models do very approximately simulate (Birhane & McGann, 2024; Werse, 2023).

Personalization emerged as a second mechanism that can help explain. Adaptive learning systems employ data from learners to personalize learning activities and learning activity sequences that fit individual learners (Neupane et al., 2025; Wen et al., 2025). This is particularly important within a classroom setting where different learners will be present, and there is only so much that teachers can do. Personalization, though, is not sufficient for effective learning. This is shown over and over again (Chen et al., 2022; Loos et al., 2023).

It is worth emphasizing that the empirical evidence for both sets of mechanisms is highly variable in kind and quality. On one side, it is mostly short-term and skill-related evidence about positive outcomes from AI-supported practice and personalization in empirical studies about AI. This kind of study is mostly about improving writing proficiency, pronunciation, and learner satisfaction, for instance, and is rarely about long-term language acquisition and use. On another side, critical and conceptual studies about LLMs are tilted towards epistemic and ethical considerations that do not benefit from empirical data about educational intervention effects in classrooms. This is why LLMs surface in the synthesis, both positive and limited at the same time, to enhance language use dimensions such as pragmatics and intercultural knowledge.

Variability Across Contexts and Learner Populations

One significant trend that arises from this analysis is the mixed nature of the benefits that AI offers. It was predominantly in the context of higher education and the availability of technology that the greatest benefits had been experienced by the learners in terms of having the required self-regulation to exploit the technology (Crompton et al., 2024; Zhu & Wang, 2025).

On the other hand, research conducted in low-resource contexts demonstrated both the promise and fragility of these approaches. For example, while AI-powered mobile tutors increased opportunities to practice English language proficiency for some students, their success depended on some factors and contexts ((Mustafa et al., 2024; Shalevska, 2023). The implication here is that AI solutions to inequities exist within larger socio-technical systems.

Additionally, learner characteristics played a part. Those who were autonomous and motivated seemed to be better equipped to utilize AI feedback effectively, whereas novices towards digital literacies and highly dependent individuals might tend to engage superficially with AI (Ravšelj et al., 2025; Sok & Heng, 2023). These observations highlight once again that AI effectiveness is a quality that is context-dependent and is better understood through multiple dynamics at play.

The scholarship also shows a conflict between the idealized potential of AI in the area of educational equity, on one hand, and its contingent effectiveness, as shown in empirical studies, on the other. Although some review studies have introduced AI-enabled tools as a scalable solution to promote access to learning in English, empirical studies have shown how access to AI-enabled tools is contingent on a stable infrastructural environment, institutional support, and digital literacy. Consequently, improving educational inequities is less direct in AI-enabled tools. This

shaped this thematic analysis by making educational inequities a function of broader socio-technical contexts, rather than a potential in AI itself.

Trade-offs and Tensions in AI-Enhanced TESOL

It also emerges from the critique that there are trade-offs that tend to affect the story of technological development. A major trade-off emerges in the relationship between efficiency and authenticity. Here, the strengths of the technology lie in the area of feedback and authenticity, but with efficiency that might reduce the impact of authentic human exposure (Busso & Sanchez, 2024; Jacobs, 2024).

A further tension is that of personalization against privacy. In adaptive learning, a large amount of data is collected about the student, placing them within a field of observation that could impact their autonomy and trust in these technologies should they not be balanced properly (Nguyen et al., 2023; Yan et al., 2023). The educational benefit of personalizing a student's educational path against the privacy implications becomes a consideration.

Another tension is related to innovation and homogenization. Although AI-generated contents provide access and diversity, there is a potential for these contents to reinforce global linguistic patterns. Unless critical interfaces alter these patterns, there is a likelihood of overlooking World Englishes and local communication practices, contrary to fundamental principles of TESOL in equity and linguistic diversity (Ali et al., 2025; Zhu & Wang, 2025).

Reconfiguring Teacher Roles and Professional Agency

Contrary to making teachers redundant, the results indicate that the integration of AI changes what teachers do. Today, teachers function as curators, facilitators, and ethics arbitrators in ensuring the AI output is properly interpreted and critically positioned (Case et al., 2025; Kohnke & Zou, 2025). This explains why the readiness of teachers was identified as one of the themes in the research. The integration of AI in the learning process requires more than mere knowledge familiarity. Among the literature surveying the issue, views on the roles of teachers in AI-mediated TESOL settings have been inconsistent. While some literature surveyed, which relied on survey research methods, unabashedly reported the lack of preparation among teachers, as well as the ambiguity of these roles in environments integrating AI, in other literature, which surveyed teacher education programs, AI use had been viewed as reframing rather than diminishing the role of the educator, keeping in mind the roles about mediation, the critical analysis of AI-generated results, as well as the AI literacy of the learners.

The TPACK model, as well as the SAMR approach, gives a general direction on how AI should be integrated for instructional purposes. However, it appears that the use of these potential resources in staff training, as noted in the review, is in some cases indiscriminate, especially in less well-off institutions (Afzaal et al., 2024; Watermeyer et al., 2024) AI, if not inculcated in a systematic manner, may instead increase teachers' apprehension rather than instill innovation

Implications for Sustainable AI Integration in TESOL

Taken together, the results suggest one conclusive finding: AI is best used in TESOL as a teaching aide and not a replacement. On one hand, the potential of AI includes supplementation of feedback and the extension of practice time, and on the other, the limitations suggest the continued need for human intuition and cultural mediation.

Hence, a sustainable integration of innovation and restraint is required in the case of AI to fully benefit from the efficiencies of the technology while maintaining the interpretive and socially

embedded aspects of language learning. This approach needs collective action in the realms of research and teacher preparation to ensure the technology promotes an egalitarian TESOL instead of being an impetus for the existing divide. Other than theoretical and analytical aspects, the implications of the systematic scoping review have various practical implications for TESOL. Firstly, while there is clear positive evidence regarding AI-enhanced feedback and additional practice, it is clear that there is potential in terms of supporting teachers to strategically employ AI as additional practice arenas, as well as leaving face-to-face interaction as a means of meaning construction, functional development, and intercultural conversation. Secondly, while finding incongruences with regards to personalization, there is potential with regards to pedagogically sound employments of adaptive software. This is because teachers are essential in ensuring that learners make sense of AI-informed responses to their work, articulate their further educational goals, and further employ metacognition with regard to their responsiveness to AI-enhanced software. This has implications in ensuring that there are no superficial employments. Thirdly, while findings regarding bias-equity issues and privacy are incongruous in terms of adopting AI-enhanced software in TESOL contexts, it is clear that there is great potential in ensuring that critical AI literacy is considered in TESOL contexts. This is because, in addition to employing AI software, teachers are also facilitators. This implies that they have to make issues with regards to accuracy, cultural inclusion, and further issues with regards to ethics explicit to students.

The research seeked to investigate how artificial intelligence has impacted TESOL research and practices from 2020 to 2025. The study conducted using a systematic scoping review. The findings of 110 peer-reviewed articles showed the impact of artificial intelligence, which has emerged as a significant influence within language learning. AI-assisted feedback tools and adaptive technology have increased opportunities for practice and access to extend beyond the limitations of the classroom.

Conversely, the results also revealed that the integration of AI in TESOL is neither neutral nor completely positive. The protracted difficulties associated with pedagogical fit, fairness in access, teacher readiness, and ethical management make it difficult to be too optimistic about this process from a technological point of view. The greatest positive effects in linguistically defined domains, such as error-free writing and speaking pronunciation, were recorded, whereas achievements in pragmatics, intercultural understanding, and sustainable autonomy showed up mixed and context-dependent. Again, this supports that it is from their pedagogically, ethically, and societally defined embodiment that AI adds educational value. In sum, the review above reiterates that the role of AI should be perceived within the context of TESOL as an augmentation, not a substitution. The possible benefits that AI holds in improving the acquisition of a language require the actuation of the teacher. Second, the findings of the study highlight the scope of research that should be conducted to understand the implications of the study. The study has implications not only at the level of research but also at the level of the teacher regarding the implications that AI has within the context of TESOL.

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