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Artificial Intelligence in English Language Teaching and Learning in ASEAN Higher Education: A Systematic Literature Review (2021–2025)

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Abstract

Even though AI tools are being increasingly utilized in English language education within the ASEAN higher education context, the region remains an underexplored focus of research, particularly in terms of PRISMA-grade literature reviews, which remain scarce. This systematic literature review aimed to: 1) examine the research methods and bibliometric data of empirical studies on artificial intelligence (AI) use in ASEAN higher education English language learning published from 2021-2025; 2) synthesize findings about reported learning gains and concerns; and 3) identify the conditions that mediate outcomes and describe remaining research gaps.

This research searched two databases, Scopus and ThaiJO, to identify relevant studies. Scopus returned 692 studies, and ThaiJO returned 998, for a total of 1,690 potential studies. Initial rounds of screening based on the title, abstract, and inclusion and exclusion criteria yielded 150 studies. Full-text screening resulted in a corpus of 128 studies. Descriptive bibliometric analysis was used to address Objective 1. Thematic synthesis, framed by the Technology Acceptance Model (TAM) and Vygotsky's Sociocultural Theory, was then employed using dual coding to generate interpretative themes to address Objectives 2 and 3.

Approximately 70% of studies were published in 2025 alone, with 121 studies (95%) reporting gains and 60 (47%) raising concerns. Indonesia, Thailand, and Vietnam accounted for 98 studies (77%). Key findings indicated a paucity of research concerning teacher readiness, AI literacy, and receptive language skills. Additionally, only five multi-ASEAN studies were included, limiting regional generalizations. At the instructional level, learning gains were most supported when AI was utilized as a tool within a structured pedagogical framework, while teacher readiness should be addressed to support English language learning at the institutional level. Further studies are needed to close research gaps and increase regional applications.

Keywords: Artificial Intelligence; AI in Education; English Language Teaching; ASEAN Higher Education ; Systematic Literature Review

Introduction

Generative Artificial Intelligence (Gen AI) is becoming an increasingly ubiquitous part of personal and professional lives and capabilities (Banh & Strobel, 2023; Wang, Li, Xu, & Chen, 2026). ChatGPT ushered in a new age of knowledge creation and consumption, characterized by both promises and documented concerns (Twinomurinzi & Gumbo, 2025). Within academia, studies concerning Gen AI have boomed in recent years (Bozkurt, 2024).

Language learning has been identified as a promising application of Gen AI (Law, 2024), notably for practicing productive skills (Godwin-Jones, 2024). While English language proficiency has long been studied as a source of economic, social, and career opportunities in the global marketplace (Hossain *et al.*, 2025), personalized tutoring comes with prohibitive costs for some. This is especially relevant to environments where English is taught as a foreign language, notably within member states of the Association of Southeast Asian Nations (ASEAN). While ASEAN is not



a homogeneous context with respect to English language education, with varying degrees of English language usage, access to technology and infrastructure, and divergent higher education systems, a regional synthesis may be a useful starting point for inter-regional practice.

The higher education context is especially relevant for Gen AI for English-language learning, as students may be more self-directed and autonomous learners (Huynh & Vo, 2026). Tools such as ChatGPT provide space for English language practice for free or at reduced costs compared to human tutors or self-learning programs (Abano & Estremera, 2026), which are location- and time-independent. While literature reviews of Gen AI for English language learning have been conducted (Chan *et al.*, 2026; Li *et al.*, 2026), there is a gap in terms of PRISMA-grade systematic literature reviews within the ASEAN English language education context. Existing global literature reviews have included studies from Asia (Li *et al.*, 2025) and some studies from Southeast Asia (Deng & Jamaludin, 2026; Zhu & Wang, 2025), although there remains a lack of focus on ASEAN higher education specifically, as well as the combined analytical dimensions introduced by conceptualizing both the a) perceived acceptance of Gen AI and b) use of Gen AI as a pedagogic scaffold, for English language learning.

Two theories framed this study: Davis's (1989) Technology Acceptance Model (TAM) and Vygotsky's (1978) Sociocultural Theory. The former is based on the notion that technology is accepted for use once it is perceived as user-friendly and beneficial, while the latter is operationalized by the Zone of Proximal Development (ZPD), purporting that learning is best supported with scaffolding that bridges the gap between what a learner can do individually and with assistance to achieve increased outcomes. Both theories may inform the usability and pedagogical relevance of Gen AI's perceived ease of use and reported English-language learning gains.

The paucity of PRISMA-grade synthesis via a combined technology acceptance and scaffolded learning analytical lens with respect to ASEAN higher education specifically motivated the current study. Benefits of an ASEAN research synthesis may include recommendations for the integration of AI as a scaffold within English language courses, and implications for practitioner professional development and regional education policy. The present review utilized the PRISMA 2020 protocol (Page *et al.*, 2021) as a transparent, reproducible research strategy for systematic literature reviews. Descriptive bibliometric analysis was used to evaluate research studies in the included corpus, while thematic synthesis was conducted to identify reported learning gains and concerns regarding Gen AI as an English language learning tool.

Research Objectives

1. To examine the research methods and bibliometric data (publication year, country, AI tools, primary focus, and research methodology) of empirical studies on the use of artificial intelligence (AI) in English language learning in ASEAN higher education published from 2021 to 2025.
2. To synthesize findings about reported learning gains and concerns.
3. To identify conditions that mediate outcomes and describe remaining research gaps.



Research Methodology

The current study employed a systematic literature review to synthesize empirical research studies, guided by the PRISMA 2020 statement (Page *et al.*, 2021).

Instrument Development: The data extraction process consisted of 16 fields to capture relevant bibliometric data. Bibliographic data included author(s), title, publication year, source database, and digital object identifier (DOI). Regarding study characteristics, country/countries, education level, and methodology were extracted. Information about the primary AI tool, AI tools mentioned, the primary learning or pedagogical focus, and language skills addressed was also compiled. Research outcomes included learning gains, concerns, outliers, and a findings summary.

Instrument Quality: Reliability was established through independent double-coding by both researchers (Belur *et.al*, 2021). Forty-three studies (34%) were randomly selected and audited using bibliometric data and thematic coding. Disagreements were resolved through consensus discussion (Halpin, 2024) until both authors reached full agreement. Inclusion and exclusion decisions, changes to the corpus, and revisions of coding were documented in a consensus log. Additionally, a codebook was developed with explicit decision rules to control for interpretive drift. The quality appraisal process consisted of the independent double-coding procedure, chronological consensus log, and the co-developed codebook. Fifteen codes were developed (see Table 1): six were primary (P1-P6), five were secondary (S1-S5), and four were idiosyncratic (I1-I4). Primary and secondary codes were developed deductively, informed by TAM and ZPD, before coding commenced. Idiosyncratic codes emerged inductively through analysis and consensus discussion.

Table 1. Codebook Theme Alignment with TAM and ZPD.

Tier	Codes	Theory
Primary	P1: Learning-outcome gains	ZPD
	P2: Engagement & motivation gains	TAM
	P3: AI as ZPD scaffold	ZPD
	P4: Academic integrity & ethics concern	TAM
	P5: Accuracy & reliability concern	TAM
	P6: Over-reliance & skill erosion	TAM + ZPD
Secondary	S1: Pedagogical integration & scaffolding	TAM + ZPD
	S2: Teacher adoption & readiness	TAM
	S3: Feedback & formative assessment at scale	ZPD
	S4: Prompting & AI literacy skills	TAM + ZPD
	S5: Equity & access	TAM



Tier	Codes	Theory
Idiosyncratic	I1: AI self-representation / non-human	<i>Inductively emerged from data.</i>
	I2: Receptive skill focus	
	I3: Discipline-specific/ESP context	
	I4: Null / counter-findings	

Source: Opatz & Praditsilp (2026)

Data Collection: Data collection commenced on May 9, 2026, following human research ethics approval. Keyword clusters were based on five keywords: AI tools, learning outcomes, pedagogical approaches, English language education, and ASEAN higher education. Boolean strings were then developed and deployed, including all synonyms and related terms (see Table 2). The results returned a total of 1,690 potential studies, 692 from Scopus and 998 from ThaiJO (see Figure 1). Thai-language studies were intentionally included to capture research indexed in the ThaiJO database not available in English; the authors acknowledge this may yield a regional skew toward Thailand in the findings. The full Boolean string was deployed identically in both databases, using All Fields as the field scope, filtered by date (2021-2025), while advanced search (Beta) was utilized on ThaiJO with a relaxed match strategy (partial OK).

Five duplicates were removed, and 1,685 studies were screened by title and abstract through the inclusion criteria: Empirical studies published between 2021 and 2025, in English or Thai, studying the effects of AI tools within ASEAN English-language higher education. For this review, the following operational definitions were used: empirical studies were defined as studies reporting primary data collection and analysis as opposed to reviews, opinion pieces, or theoretical papers; AI tools were defined as AI applications used for English language education including Gen AI, automated writing evaluation, machine translation, chatbots, and language learning applications; AI effects were defined as the effects, perceptions, outcomes, or experiences with AI tools regardless of research design; ASEAN studies were defined as studies conducted in an ASEAN member state; English language teaching and learning was defined as any aspect of English language education; and higher education context was defined as a university or tertiary-level education institution. Studies outside of ASEAN higher education contexts, not studying AI tools' effects on English language education, or published outside the period 2021-2025 in a language other than English or Thai were excluded; 1,530 studies were excluded, resulting in 155 studies. Five studies were unretrievable due to broken web links, and 150 studies were accessed for full-text review. Twenty-two studies were removed because they did not fully meet the inclusion criteria, including one retracted study, leading to a corpus of 128 studies.



Table 2. Keywords, Keyword Clusters, and Boolean Search Strings.

Keywords	Keyword Clusters	Boolean Search Strings
AI tools	artificial intelligence; AI tools; generative AI; ChatGPT; large language models; LLM; machine learning; AI-assisted learning; intelligent tutoring systems; automated feedback; AI writing tools; natural language processing	(artificial intelligence OR AI OR generative AI OR ChatGPT OR "large language model*" OR "intelligent tutoring" OR "automated feedback" OR "AI writing tool*")
Learning outcomes	learning outcomes; student achievement; academic performance; language proficiency; writing skills; reading comprehension; speaking skills; listening skills; vocabulary acquisition; learner motivation; learner engagement; self-regulated learning	("learning outcome*" OR "student achievement" OR "academic performance" OR "language proficien*" OR "writing skill*" OR "learner motivation" OR "learner engagement")
Pedagogical approaches	pedagogical approaches; teaching methods; instructional design; blended learning; flipped classroom; technology-enhanced learning; AI integration; teacher practices; curriculum design; feedback practices; formative assessment; digital pedagogy	(pedagog* OR "teaching method*" OR "instructional design" OR "blended learning" OR "technology-enhanced learning" OR "digital pedagog*" OR "teacher practice*")
English language education	English language teaching; EFL; ESL; ELT; English as a foreign language; English language learning; second language acquisition; language courses; English proficiency; language classroom; English writing instruction	("English language" OR EFL OR ESL OR ELT OR "second language acquisition" OR "English as a foreign language" OR "language course*" OR "English writing")
ASEAN higher education	ASEAN; Southeast Asia; higher education; university; tertiary education; Thailand; Vietnam; Indonesia; Malaysia; Philippines; Singapore; Myanmar; Cambodia; Laos; Brunei Darussalam • Timor Leste (admitted into ASEAN on 26th October, 2025)	(ASEAN OR "Southeast Asia" OR Thailand OR Vietnam OR Indonesia OR Malaysia OR Philippines OR Singapore OR Laos OR "Brunei Darussalam" OR "Timor Leste" OR "higher education" OR university OR "tertiary education")

Source: Opatz & Praditsilp (2026)



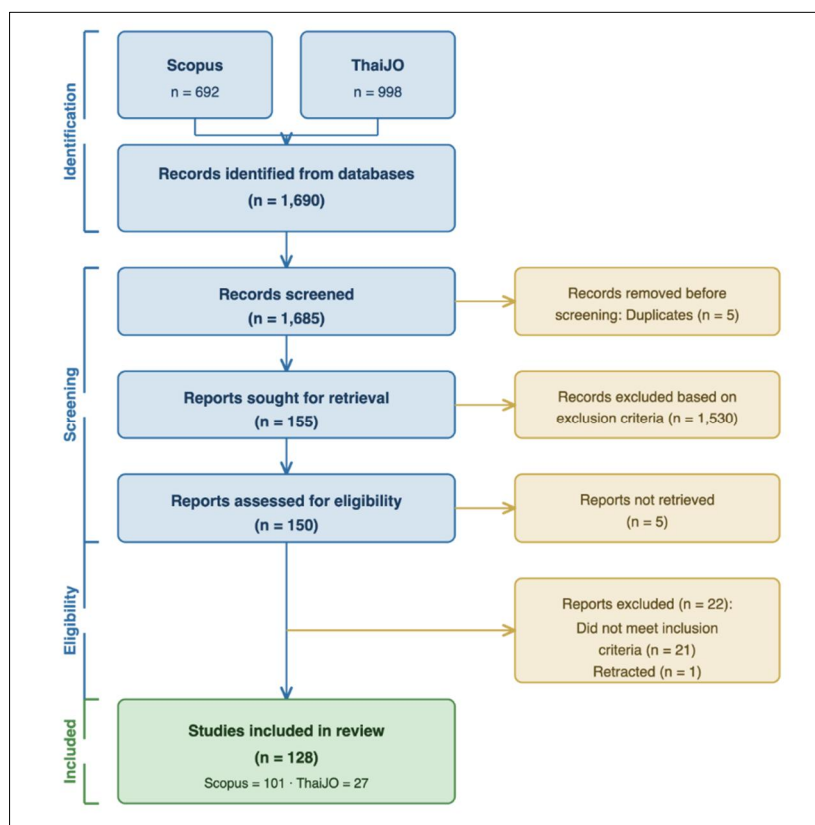


Figure 1. PRISMA 2020 flow diagram of the study selection process.

Source: Opatz & Praditsilp (2026)

Data Analysis: The corpus was analyzed in two stages. Descriptive bibliometric frequencies were logged to describe publication trends, regional distribution, AI tools, research methodology, and outcome coding. Frequency counts of learning gains, concerns, and outliers represent descriptive summaries of coded outcomes and do not constitute causal or inferential claims; the variety of study designs is addressed in the Discussion section. Thematic synthesis (Thomas & Harden, 2008) was next conducted through dual coding and a theory-informed codebook approach to organize and interpret study results. Initial coding was influenced by deductive codes, informed by TAM (Davis, 1989) and ZPD (Vygotsky, 1978), agreed upon prior to coding. Both TAM and ZPD were utilized as organizing frameworks to inform code development rather than as theories being tested themselves. Inductive, or idiosyncratic, codes also emerged from the data after discussion, culminating in a codebook with decision rules.

Consensus coding was employed to reduce individual bias and heighten academic rigor and objectivity (Richards & Hemphill, 2017). Independent double-coding was first carried out, followed by collaborative reviews to identify areas of disagreement. Full-text analysis of reports assessed for eligibility was divided into eight batches of 18-19 studies. Coding meetings took place after each batch was evaluated; the codebook was updated after each meeting based on consensus discussion. Reports with inter-coding discrepancies were flagged in the consensus log and discussed at length until full agreement was achieved. Inductive, idiosyncratic codes were



developed as a result of consensus discussions and were added to the deductive primary and secondary codes. All studies were then reviewed again against the finalized codebook to ensure coding consistency.

Research Results

Results for Objective 1: A large majority (70%), or 89 included studies, were published in 2025, followed by 31 in 2024, 6 in 2023, and 2 published in 2022; no studies included in the corpus were published in 2021 (see Figure 2). Of all single-country ASEAN countries, 40 studies were conducted in Indonesia, 35 in Thailand, 23 in Vietnam, 13 in Malaysia, 10 in the Philippines, and one each in Myanmar and Singapore. The top three countries accounted for 77% of the corpus, while only five studies were conducted across more than one country. ChatGPT was studied in 72 studies (56%), followed by Grammarly, Gemini, QuillBot, and Duolingo. Regarding the primary focus, writing was the subject of 62 studies; 36 examined general proficiency, 16 studied speaking, and 3 focused on grammar. Translation was the topic of 3 studies, while reading, listening, and vocabulary were each the focus of 2 studies; of note, 2 studies examined academic integrity outcomes. In terms of research methodology, 41 (32%) were qualitative, 35 were mixed methods, 27 were experimental or quasi-experimental, 23 were survey or quantitative, and 2 were case studies.

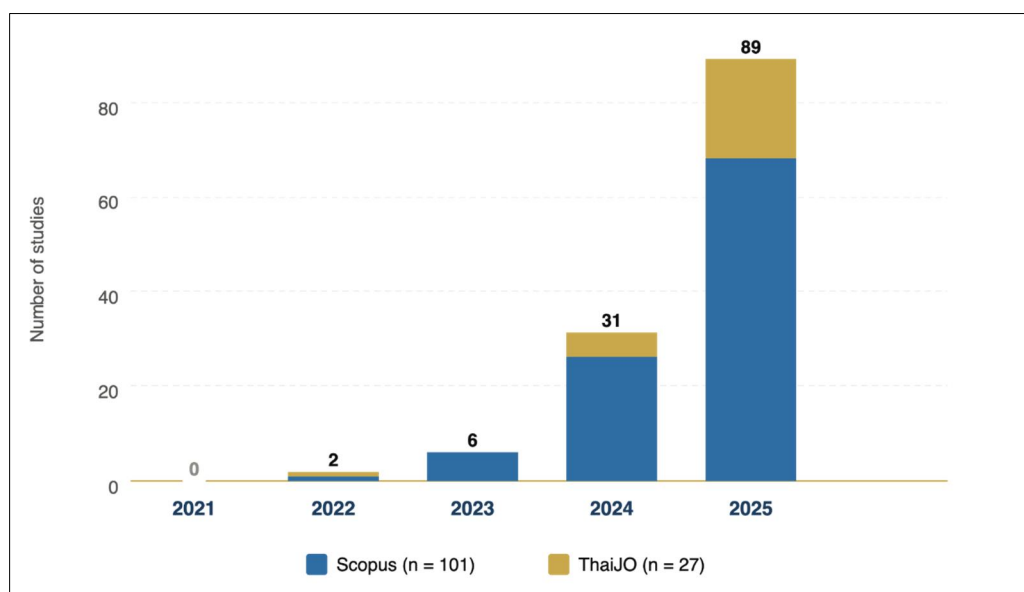


Figure 2. Number of included studies by year and database.

Source: Opatz & Praditsilp (2026)



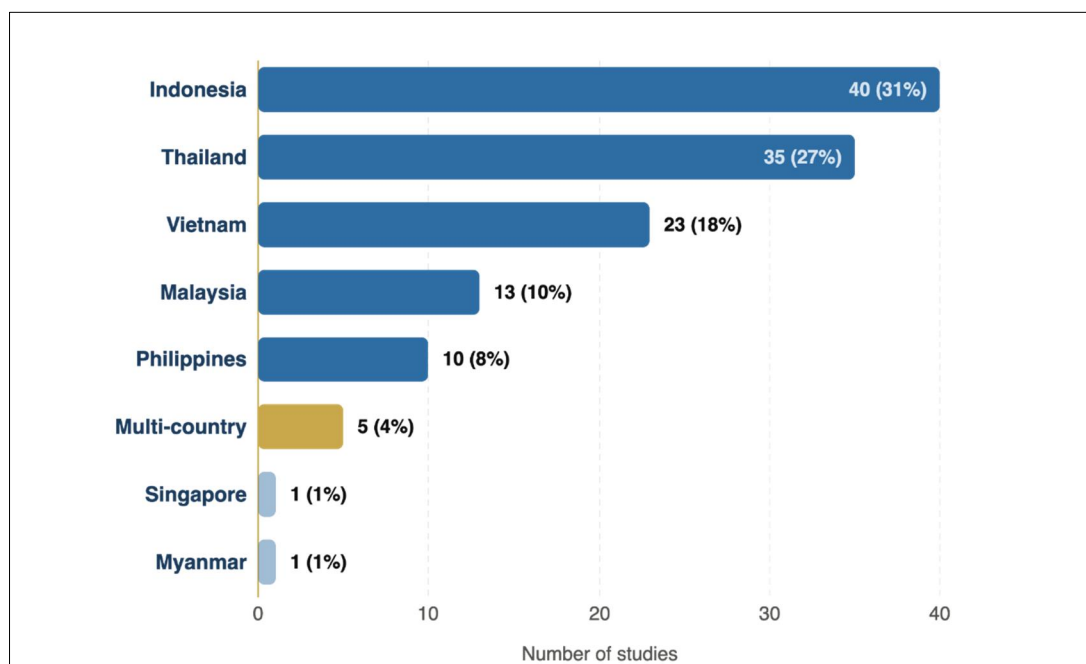


Figure 3. Distribution of included studies by country.

Source: Opatz & Praditsilp (2026)

Results for Objective 2: Gains were reported for 121 studies (95%), and concerns were found in 60 studies (47%). Learning gains (P1) were primarily coded in 60 studies, including writing, speaking, reading, and general proficiency. Engagement & motivation (P2), or positive affective outcomes, increased participation, and AI adoption were reported in 33 studies. AI as a ZPD scaffold (P3) was the primary finding in 10 studies. In an ANCOVA (Analysis of Covariance) experiment, the ChatGPT prompting group significantly outperformed the control group in writing, although cognitive offloading and academic integrity were documented as concerns (Andewi *et al.*, 2025). Kyaw & Sukavatee (2025) found that AI led to gains with a Think-Pair-Share strategy (n=32). Lastly, Kawinkoonlasate (2025) found that Gemini outperformed ChatGPT in research writing and structure (n=80), notably in feedback for rural learners.

Only nine studies were coded with concerns as their primary theme, including five with academic integrity & ethics (P4), three with accuracy & reliability (P5), and one with over-reliance & skill erosion (P6). Counter-findings include Thongsri (2024), which reported a 70% AI error rate for English-to-Thai translations compared with a 30% student error rate (n=20). In a survey of 134 graduate students, Tangente & Bahian (2025) found a null correlation between AI usage frequency and attitude outcomes. Sumakul & Hamied (2023) reported amotivation in AI-integrated classrooms (n=133). Interestingly, counter-findings were documented in studies measuring accuracy, correlation designs, and research designs lacking structured pedagogy.

Results for Objective 3: In terms of secondary codes, pedagogical integration & scaffolding need (S1) was the most widespread, with 80 mentions (62%), supporting clear integration of AI and clear pedagogy to achieve learning gains. Teacher adoption & readiness (S2) appeared in 25 studies, while feedback at scale (S3) frequently appeared alongside S1 at 46 mentions. Prompting & AI

literacy skills (S4) were coded in 53 studies, the fastest-growing theme concerning conditions, with most mentions occurring in 2025 publications. Lastly, equity & access (S5) was only mentioned in 13 studies.

Regarding research gaps, receptive skills were the focus of only 4 studies: 2 listening and 2 reading; productive skills dominated the corpus. Only 27 studies (21%) described causal evidence through experimental or quasi-experimental designs; accordingly, 79% of the corpus did not support causal claims. The inclusion of only five multi-country studies limits the regional generalizability of the findings. There is an absence of studies conducted in Brunei Darussalam, Cambodia, and Laos. Finally, ChatGPT appeared in a majority of studies, which limits the transferability of findings to AI tools more broadly.

Discussion

Discussion of Objective 1: The exponential growth of published research in the corpus, 70% in 2025 alone, indicates a growing field as opposed to an established body of evidence. This aligns with Lo's (2023) findings after the introduction of ChatGPT. Both longitudinal and replication studies are absent due to the novel nature of Gen AI, highlighting the necessity of increased academic rigor on the topic (Bond et al., 2024). Additionally, the abundance of research within Indonesia, Thailand, and Vietnam demonstrates the research capabilities of institutions in those countries to publish indexed journal articles compared with Myanmar, Cambodia, and Laos, rather than widespread instructional adoption. Crompton & Burke (2023) found a similar pattern in AI studies in higher education and English-speaking countries. Furthermore, the domination of ChatGPT and writing skills research is reflective of the tools' accessibility. Receptive skills appear to be under-studied because the foremost applicability of Gen AI tools is aligned with productive skills.

Discussion of Objective 2: The apparent contradiction between reported gains (95%) and concerns (47%) within the corpus describes most of the studies discussing concerns as secondary to their primary codes, which reported gains. Moreover, many concerns are rooted in the study design rather than the AI tools themselves; ChatGPT is found in the strongest studies for causal gains and in counter-findings. For example, when ChatGPT was used within structured, pedagogical scaffolding with prompting guidance, the experimental group significantly outperformed the control group (Andewi *et al.*, 2025), consistent with ZPD principles. The results also underscore TAM's construct of perceived usefulness (Davis, 1989). However, when ChatGPT was framed as a replacement for human translators rather than a scaffold, students outperformed ChatGPT by over 133% (Thongsri, 2024).

A majority of reported gains came from research on perceived gains utilizing Likert scales, while Thongsri's (2024) counter-narrative conducted an objective analysis. Additionally, frequency of use was shown to be less important than how AI tools are used (Tangente & Bahian, 2025). Amotivation towards AI resulted, in part, from instructional quality rather than the AI tool itself



(Sumakul & Hamied, 2023). The efficacy of AI in English language learning is not inherent; it is mediated through pedagogical and instructional design.

Discussion of Objective 3: Studies coded with teacher adoption & readiness (S2) identified support at the institutional level and AI training as related to perceptions of ease of use. This is aligned with TAM (Davis, 1989), which argues that a perception of low usability and supporting conditions negatively affects technology adoption. Hastomo *et al.* (2025) described teacher AI self-efficacy as reliant on institutional hierarchy, in line with the view of AI acceptance as limited systemically and structurally. Without professional development directly addressing instructional AI implementation, AI tools may not be utilized to increase learning outcomes.

Prompting & AI literacy (S4), also related to S2, are novel skills; they are examples of learnable and useful mediating instruments (Vygotsky, 1978). The implication points to AI use without instruction and guidance leading to uneven outcomes. Lastly, equity & access (S5) was the least mentioned code, which in and of itself illustrates its importance. The research infrastructure at the institutional level in Myanmar, Cambodia, and Laos remains underrepresented in the corpus, limiting the evidence base for these contexts. The rural-urban dichotomy described within Thailand (Kawinkoonlasate, 2025) situates equity and access as not only a regional but also a national issue. In terms of AI educational development, ASEAN nations that appear to be the most at risk of being marginalized are also the least represented within the corpus to inform policy.

Recommendations

Practical Recommendations:

1. Based on P1 gains, it is recommended that AI use is positioned as a scaffold rather than to generate content. For example, writing revision instead of the ideation stage, as productive struggle is valuable (Vygotsky, 1978).
2. AI may also be leveraged in providing feedback. Findings suggest prompting should be explicitly taught as an academic literacy instead of a digital skill due to its task-specific nature, to improve learning outcomes.
3. Professional development in prompting is also recommended to strengthen learners' AI literacy, based on S4 prompting and literacy coding as the fastest-growing theme in 53 studies, with a majority in 2025.
4. A strong emphasis on teacher AI literacy is recommended to guide tool use before deployment to increase teacher adoption and readiness at the institutional level, in line with TAM. This may enhance institutional readiness as a whole, as AI self-efficacy was found to be grounded in institutional hierarchy (*et al.*, 2025), and support learning gains.
5. Regarding ethical AI implementation, explicit academic honesty guidelines regarding Gen AI use are also strongly advised, as almost half of the corpus raised concerns. Even in the strongest-gains-reported experimental study, academic integrity was a clear concern (Andewi *et al.*, 2025).



Policy Recommendations:

1. Multinational studies are recommended for building regional collaboration and applicability, as only 4% of included studies were conducted intra-regionally. The paucity of indexed empirical studies from Myanmar, Cambodia, Laos, and Singapore in single-country studies, and the absence of Brunei Darussalam in any study, highlights underrepresented contexts within ASEAN. Because current findings are regionally skewed, increased regional collaboration through funding institutions, such as the ASEAN University Network, is highly recommended.
2. Investments in research infrastructure may be important in driving AI educational equity and access.

Future Research:

1. Future research should be conducted in additional regional databases, including SINTA from Indonesia, Vietnam's VJOL, and PEJ from the Philippines, to increase visibility by country.
2. Quality-graded systematic reviews are urged to increase evidence reliability.
3. More studies should also be conducted on receptive skills, as well as longitudinal and experimental designs to establish causation.

Ethics Approval

This study was approved by the Thaksin University Ethics Committee on Human Research, Thaksin University, under approval number TSU 2026_138, REC No. 0354, study code 238/69, dated May 9, 2026.

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