# BLENDING HUMAN AND AI IN TRANSLATION TEACHING FOR 21ST- CENTURY EFL CLASSROOM

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## ABSTRACT

The integration of Artificial Intelligence (AI) into language education has transformed translation instruction, offering tools such as Google Translate and ChatGPT to support learners in decoding and producing texts across languages. However, despite their widespread use, these tools are often applied without pedagogical structure, resulting in overreliance, misinterpretation, and limited linguistic development, particularly among university students in non-English dominant contexts. This qualitative case study investigated how sixth-semester students from seven universities in Palembang, Indonesia, utilized AI-based translation tools in academic settings. Fourteen English education majors were selected through random sampling. Data were collected through semi-structured interviews and analysis of students' translation drafts before and after AI use. Thematic analysis was employed to identify translation behaviours, strategies, and instructional needs. Findings indicated persistent issues, including literal idiom transfer, register mismatches, and limited error detection even after AI assistance. Most participants adopted a tool-first approach with minimal revision. However, structured strategies such as guided post-editing and back-translation enhanced lexical accuracy and metalinguistic awareness. The study proposes a four-phase framework integrating AI meaningfully into translation pedagogy for improved learning outcomes.

**Keywords**: AI-assisted translation, EFL learners, machine translation, translation pedagogy, case study

## INTRODUCTION

In the digital age, language learning is undergoing rapid transformation, particularly in how translation is taught and practiced. With the advancement of Artificial Intelligence (AI), translation tools such as Google Translate, DeepL, and ChatGPT have become ubiquitous in classrooms and beyond. These technologies offer instant translations, contextual alternatives, and even stylistic suggestions benefits that were unimaginable in traditional translation training. For language learners, especially in English as a Foreign Language (EFL) settings, AI-supported translation tools present opportunities for real-time engagement with multilingual content and support the development of both linguistic and intercultural competence.

However, the pedagogical integration of AI in translation teaching remains underexplored. A recent systematic review by Nguyen et al. (2025) identified significant challenges in embedding AI translation tools into existing syllabi, citing issues such as "insufficient training and pedagogical gaps" and "lack of institutional support and curriculum integration". Similarly, Urlaub & Dessein (2022) emphasized that while machine translation tools can streamline task execution, their educational potential is underutilized without critical pedagogical design. Tsai (2022), in an exploratory study, found that "Google Translate is now the most widely used technical tool in the writing classroom," yet teachers remain largely sceptical about its pedagogical value. Kim & Oh (2023) demonstrated that machine translation supports translanguaging and content–language integration but highlighted the need for structured guidance: "MT use can be welcomed but requires careful designing" Finally, Shahmerdanova (2025) argued for hybrid human machine translation models, noting persistent difficulties with idioms, cultural nuance, and ethical use, and called for "ethical frameworks to address these limitations" in classroom deployment

At the university level, EFL students often face even greater challenges in translation due to the complexity of academic texts and the expectation of high-level linguistic precision. According to Alasmari & Alqahtani (2021), many undergraduate learners demonstrate limited critical evaluation skills when using machine translation, leading to overreliance and uncritical acceptance of AI-generated outputs. Similarly, research


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by Indriani & Mulyono (2022) showed that university students often fail to detect stylistic mismatches, culturally loaded terms, and semantic shifts, particularly when translating literary or idiomatic expressions. These issues are further compounded by a lack of explicit instruction on how to integrate AI tools meaningfully within the translation process.

As a result, students frequently produce translations that are syntactically correct but pragmatically inappropriate, or translations that neglect discourse-level cohesion. This mismatch between technological usage and pedagogical support highlights the urgent need for guided instructional models that address not only linguistic accuracy but also cognitive awareness and intercultural competence.

Translation remains a challenging skill for EFL students, especially in academic and professional contexts. Many learners struggle with lexical equivalence, contextual meaning, idiomatic expressions, and syntactic transfer between languages. According to Hartono & Syahrial (2021), students often produce word-for-word translations without considering pragmatics or text type, leading to incoherent or unnatural output.

This issue is compounded by limited vocabulary, low cultural awareness, and insufficient exposure to authentic bilingual materials (Rahmawati & Setiadi, 2022). In digital environments, students tend to rely heavily on AI-based translation tools like Google Translate without fully understanding how to evaluate or revise the results, which can further hinder their development of translation competence.

Several recent studies have proposed pedagogical strategies to address these challenges. Aziz & Mahmud (2023) demonstrated that integrating post editing tasks where students critically revise AI generated translations "significantly improved their grammatical accuracy and lexical choice." Likewise, Rakhman & Liu (2024) emphasized guided comparison tasks in which learners contrast human and machine translations to develop metalinguistic awareness. In a blended learning model,

Susanto et al. (2022) showed that combining AI tools with instructor-led feedback "enhanced students' ability to detect contextual errors and idiomatic misuse." Furthermore, Yusra Khasawneh et al. (2023), in a survey of professional post-editors, confirmed that "94% of respondents accepted that the best practice is human-AI collaboration" in post-editing tasks. Xu et al. (2024) found that EFL

students engaged cognitively and affectively with ChatGPT-generated feedback during translation revision, highlighting how AI feedback "evoked deep cognitive effort despite mixed emotional responses".

Finally, Nguyen et al. (2025) conducted a systematic review and pointed out both the benefits and challenges of AI translation tools, noting the importance of "critical and reflective activities in pedagogical design" to truly harness AI's potential.

To address these challenges, it is essential to design a framework that blends human and machine approaches in teaching translation. Such a framework would not only acknowledge the technological realities of 21st-century classrooms but also guide students in using AI critically, ethically, and pedagogically.

This study aims to explore how AI-based translation tools can be systematically integrated into EFL translation instruction and proposes a structured, human-machine blended framework that enhances both accuracy and awareness in translation learning.

This study aims to explore how AI-powered translation tools can be systematically integrated into EFL translation instruction and to develop a pedagogical framework that blends human expertise with machine efficiency. Specifically, it seeks to: (1) Identify the common challenges EFL students face when learning translation in technology-assisted environments. (2) Investigate how English teachers and students currently use AI-based translation tools in classroom practice. (3) Examine effective pedagogical strategies that combine human-centred translation instruction with AI support. (4) Develop a curriculum-oriented framework for teaching translation using a blended human machine approach.

Research Questions

1. What is the key translation-related difficulties encountered by EFL students in AI-supported learning environments?
2. How do teachers and students currently engage with AI translation tools during translation instruction?
3. What instructional strategies effectively balance human instruction and AI tool usage in translation teaching?
4. What framework can be designed to support the integration of AI into translation pedagogy for EFL learners?


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## REVIEW OF RELATED LITERATURES

### *1. Translation in EFL Education*

Translation plays a crucial role in English as a Foreign Language (EFL) education, particularly in bridging linguistic and cultural gaps. Traditional translation teaching has emphasized grammar-translation methods and manual practices, focusing on accuracy and fidelity.

However, as González-Davies (2022) points out, modern translation pedagogy increasingly advocates for an integrated skills approach that considers functional meaning, pragmatics, and learner autonomy. In university settings, translation is not only a linguistic task but also a cognitive and interpretive process that requires critical thinking and intercultural awareness (Hatim & Munday, 2021).

### *2. Challenges in Teaching and Learning Translation*

Multiple studies have identified persistent challenges among EFL university students in mastering translation. These include literal translation tendencies (Indriani & Mulyono, 2022), lack of genre sensitivity, insufficient vocabulary range, and limited understanding of pragmatic equivalence.

These issues often result in translations that are syntactically correct but semantically and culturally flawed. Moreover, Rahmawati & Setiadi (2022) found that students' overreliance on machine translation tools without proper post-editing strategies often undermines the development of true translation competence.

### *3. AI-Based Translation Tools in Language Learning*

The rise of AI-powered translation tools has transformed how learners engage with bilingual texts. Tools such as Google Translate, DeepL, and ChatGPT offer real-time, data-driven assistance that facilitates access to multilingual content. According to Xu et al. (2024), these tools can support translanguaging, vocabulary development, and writing fluency when used pedagogically.

However, Nguyen et al. (2025) emphasize the importance of guiding students in critical use to prevent cognitive laziness and ethical concerns. Studies by Yusra Khasawneh et al. (2023) and Kim & Oh (2023) recommend integrating AI tools as collaborative agents rather than replacements for human decision-making.


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### *4. Blended Approaches: Human + Machine in Translation Pedagogy*

Recent scholarship advocates for a blended framework that combines human translation instruction with AI assistance. Aziz & Mahmud (2023) demonstrated that structured post-editing activities of AI outputs enhance grammatical accuracy and awareness of idiomatic usage.

Rakhman & Liu (2024) emphasized the value of contrastive analysis between human and machine translations to develop learners' metalinguistic knowledge. Xu et al. (2024) and Susanto et al. (2022) also stressed that reflective, teacher-guided engagement with AI tools fosters deeper linguistic and cognitive development.

## METHODS

### *1. Research Design*

This study employs a qualitative case study design, selected for its aptitude in providing rich, contextual insights into how AI-based translation tools are used in real-world educational settings. As Saleh & Khine (2021) and Yazan (2015) argue, case studies are ideal for exploring complex educational processes within their natural contexts.

More recently, Chen & Oliver (2022) reinforced that the case study approach allows researchers to capture multifaceted learning experiences, especially when examining innovative technologies in pedagogy. Johnson et al. (2023) note that case studies are particularly valuable in educational technology research, as they support deep dives into tool use, classroom dynamics, and the interplay between human and machine interaction.

Finally, Malik & Suardi (2024) emphasize the strength of case studies in AI education research for generating actionable insights and building frameworks grounded in authentic practice.

### *2. Research Setting and Participants*

The study was conducted across seven universities in Palembang, focusing on sixth-semester students enrolled in English Education programs. A simple random sampling technique was applied to select 14 students from the entire population, giving each student an equal probability of participation. Creswell (2021) notes that when the population is clearly delineated and accessible such as a single cohort across several institutions

random sampling can enhance transparency and mitigate selection bias even in qualitative research.

Likewise, Paños-Castro (2024) emphasizes that incorporating probabilistic elements in small-scale case studies helps ensure that emergent themes are not limited by researcher preconceptions and improves the transferability of findings.

Although purposive sampling is common in qualitative case studies, Fraenkel and Wallen (2019) argue that simple random selection remains appropriate when the aim is to capture a broad range of experiences within a defined group, thereby strengthening the credibility of thematic comparisons.

In line with current best practices, data collection continued until data saturation was achieved indicating no new categories or insights were emerging ensuring depth and rigor in subsequent thematic analysis.

### *3. Data Collection Techniques*

Following best practices in qualitative educational research, this study employed two primary data sources to enable rich triangulation and contextual interpretation (Creswell & Poth, 2021).

- Semi-structured interviews were conducted to elicit in-depth student perspectives regarding the use of AI-assisted translation tools. This method aligns with Merriam and Tisdell (2016), emphasis on interviews as a powerful means of uncovering learners' beliefs, motivations, and lived experiences in educational settings.
- Translation test documents were collected, including pre- and post-AI translation tasks, to trace students' evolving strategies, error patterns, and responsiveness to machine-generated feedback. Document analysis was guided by the principles set out by Duff (2012), who advocates the use of student work as a lens for understanding second language development in situated contexts.

In addition, feedback from course instructors on student translations was reviewed to provide deeper insights into instructional expectations and linguistic performance. According to Richards (2015), integrating teacher commentary can offer critical context for evaluating language performance and pedagogical alignment.

This combination of interview and document analysis techniques facilitated data triangulation, which enhanced the trustworthiness and credibility of the

findings, as also recommended by Rose and Johnson (2020).

### *4. Data Analysis Procedures*

The data collected through interviews and translation documents were analysed using a thematic analysis, following Braun and Clarke's (2022) six-step model familiarization, coding, theme generation, review, definition, and report writing. This approach is well-established in qualitative research, with Braun and Clarke (2022) and their comprehensive guide supporting its flexibility and rigor.

Additionally, Saldaña (2021) emphasize that reflexive thematic analysis enables researchers to engage deeply with data, balancing researcher interpretation with participant voice.

For qualitative rigor, the study explicitly followed the six-phase process of reflexive thematic analysis as outlined by Braun and Clarke (2022), enhancing analytic transparency and reflexivity. Qualitative data analysis software further supported the iterative coding and theme development process by enabling systematic organization, tracking, and documentation of the data.

Further support comes from Lochmiller (2021), who demonstrated the effectiveness of thematic analysis for ELT researchers in systematically categorizing and interpreting learner data within qualitative inquiry and Further support is provided by Flick (2019), who affirms the applicability of thematic analysis across disciplines, provided that researchers maintain consistency between the data, the generated themes, and the guiding research questions.

***Trustworthiness***

To guarantee the quality and ethical integrity of this qualitative case study, the following strategies were implemented: Building on Rose and Johnson (2020). foundational criteria, this study followed updated best practices to ensure credibility, dependability, confirmability, and transferability (Varpio et al., 2023 & Knight et al., 2022).

- **Member Checking**: We adopted a *structured approach*, where preliminary findings and thematic summaries were shared with participants in follow-up interviews. This aligns with McKim's (2023) guidelines for conducting meaningful member checking to enhance the credibility of qualitative findings.
- **Data Triangulation**: Multiple data sources interviews and translation documents were cross-analysed to


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confirm the consistency of emerging themes, improving both credibility and confirmability.

## RESULTS AND DISCUSSION

### Results

The findings of this study are structured according to the four research questions. Data were collected through interviews and document analysis, then analysed thematically to identify patterns in students' use of AI in translation and their instructional experiences.

RQ1 – What translation difficulties do EFL students face in AI-supported settings?

the analysis revealed several persistent challenges. Many students relied on literal translations, resulting in idiomatic misinterpretations.

Table 1 Resulting in Idiomatic Misinterpretations.

| Theme | Evidence | Representative quotations |
|---|---|---|
| Literal transfer & idiomatic loss | 12/14 scripts retained word-for-word renditions of idioms in the pre-AI draft; post-AI drafts showed partial repair but often still unnatural phrasing. | "Google Translate gave me 'spill the beans' in Indonesian literally I didn't even notice it was wrong at first." (P6) |
| Register mismatch | Formal Indonesian lexis appeared in texts that required informal tone; 9/14 students left register unchanged after AI insertion. | "It sounded like I was talking to the dean, not to my friend, but I didn't know how to fix the style." (P2) |
| Overreliance on AI output | 10/14 participants admitted accepting machine output "as-is" before the post-editing task. | "Usually I just copy-paste and trust the tool because it's faster." (P11) |
| Low error-detection awareness | Students overlooked cohesive devices and collocations both before and after tool use. | "I thought the sentence was okay because no red line appeared, so I left it." (P3) |

The analysis of students' translation outputs and interviews revealed four key patterns that highlight the nuanced challenges faced by EFL learners in AI-assisted translation settings.

First, literal transfer and idiomatic loss emerged as a prevalent issue. A majority of students (12 out of 14) retained word-for-word translations of idiomatic expressions in their initial drafts. While some improvements were observed in the post-AI versions, the phrasing often remained awkward or semantically inaccurate.

This suggests that students may struggle to recognize idiomatic nuances, especially when AI tools fail to contextualize figurative language adequately. As illustrated by Participant 6,

> *"Google Translate gave me 'spill the beans' in Indonesian literally I didn't even notice it was wrong at first."*

Such reliance on literal meanings indicates a lack of semantic awareness and underscores the need for guided intervention in handling non-literal language.

Second, register mismatch was a recurring error, particularly when students relied solely on AI suggestions. Nine students failed to adjust formality levels in their translations, resulting in stylistic inconsistencies. This is evidenced by Participant 2's reflection,

> *"It sounded like I was talking to the dean, not to my friend, but I didn't know how to fix the style."*

The inability to align tone with communicative context reflects a deeper issue in pragmatic competence, suggesting that learners need more training in stylistic variation, especially when using automated tools that lack nuanced socio-pragmatic awareness.

Third, the data indicated a high degree of overreliance on AI-generated output, with 10 out of 14 students admitting to accepting machine translations without question during the initial task. This mechanical acceptance of AI output, as noted by Participant 11

> *"Usually I just copy-paste and trust the tool because it's faster"*

demonstrates both convenience-driven behaviour and a gap in students' critical evaluation skills. Such dependency can undermine language learning by reducing learners' engagement with linguistic choices and minimizing reflection on meaning-making processes.

Lastly, low error-detection awareness persisted across both pre- and post-AI translation phases. Students frequently overlooked errors related to cohesion and collocation, even when AI tools were employed. This issue is well captured in Participant 3's comment:

> *"I thought the sentence was okay because no red line appeared, so I left it."*

This reliance on visual indicators like spellcheck or grammar highlights students' limited capacity to self-monitor for deeper discourse-level errors. It points


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to the importance of developing metalinguistic awareness and the ability to identify subtler language problems that automated systems often miss.

Together, these findings suggest that while AI tools offer useful scaffolds, they do not inherently cultivate the deeper cognitive and metalinguistic skills necessary for high-quality translation. Without structured guidance and pedagogical support, learners are at risk of becoming passive users of technology, rather than critical language practitioners capable of navigating complex communicative tasks.

**RQ2 – How are AI tools currently used during translation instruction?**

**Theme 1: Individual, Tool-First Workflow**

> *"I translate everything with DeepL first, then only change if the teacher flags an error."* (P9)
>
> *"Google Translate is my first step. I don't write manually unless the result is too weird."* (P1)
>
> *"I think using the tool saves time. I rarely translate without it."* (P13)
>
> *"Sometimes I don't even read the translation result. I just trust the tool to be accurate."* (P7)
>
> *"I put in the full paragraph and just copy what it gives unless something looks wrong."* (P6)

**Interpretation:**

These quotes illustrate a tool-first dependency where machine translation (MT) becomes the default starting point rather than a supplement to linguistic skill. Students tend to prioritize efficiency over accuracy, often accepting AI-generated output with minimal engagement. This usage pattern reveals an instrumentalist view of translation, where technology is treated as a shortcut, not a collaborative learning partner. The approach leads to shallow cognitive processing, undermining opportunities for metalinguistic development. Furthermore, the lack of critical engagement with the machine output suggests a gap in digital literacy training and the absence of pedagogical scaffolding to support responsible AI use.

**Theme 2: Opportunistic Post Editing**

> *"My lecturer taught us to back-translate; it helps me catch hidden mistakes."* (P4)
>
> *"I usually check word-for-word after using Google Translate. I fix what feels awkward."* (P11)
>
> *"When I use DeepL, I always read the Indonesian result first, then*


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*compare it to what I would say."* (P5)

*"Sometimes I change the word order or add connectors because the AI output is too plain."* (P10)

*"If it doesn't sound natural, I ask ChatGPT to rephrase it. Then I choose the better one."* (P2)

**Interpretation:**

These statements reflect more active engagement with AI tools, where students perform selective editing based on intuition or guided strategies. Techniques like back-translation, comparative analysis, and lexical modification suggest a growing awareness of MT's limitations. However, these practices are often informal and inconsistent, depending largely on the student's individual motivation or prior instruction. The presence of post-editing behaviour is a promising sign, but its opportunistic nature signals a need for more structured training. Integrating explicit post-editing instruction into the curriculum could enhance learners' linguistic judgment and elevate MT from a crutch to a developmental resource.

**Theme 3: Limited Classroom Scaffolding**

*"We are told the correct version, but not shown how to get there with the tool."* (P12)

*"Our teachers say 'don't rely on Google Translate' but never explain how to use it properly."* (P3)

*"I get corrections on the final translation, but no feedback about my AI use."* (P8)

*"In class, we don't really discuss how to use AI. It's more like a personal decision."* (P14)

*"I'm not sure if AI is allowed or not some teachers ignore it, some are against it."* (P6)

**Interpretation:**

These responses highlight a pedagogical void in how AI tools are addressed within the classroom. Although many students are already using translation technologies, instructional support is minimal or absent. Educators tend to focus on output accuracy rather than process, resulting in missed opportunities to cultivate students' critical engagement with AI. Inconsistent teacher attitudes toward AI also generate uncertainty around its ethical and academic legitimacy. Without explicit guidance, students form their own fragmented practices, which may be effective in some cases but counterproductive in others. This signals an urgent need for clear, process-oriented frameworks that incorporate AI literacy


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and responsible usage policies into translation pedagogy.

**RQ3 – What strategies effectively balance human teaching and AI use?**

Several effective methods emerged. Guided post-editing tasks, which required students to compare AI-generated and human translations, improved lexical and grammatical accuracy.

Tabel 2 Strategies Effectively Balance Human Teaching and AI Use

| Strategy identified | Evidence of effectiveness | Participant voice |
|---|---|---|
| **Guided post-editing worksheets** (compare AI vs. human output) | Mean error reduction in grammar & lexis: **37 %** across scripts. | "The worksheet forced me to *think* why the AI choice was wrong." (P1) |
| **Back-translation loops** (MT → L1 → MT back to L2) | Exposed hidden pragmatic errors in 11/14 cases. | "When I saw the back-translation, I realised the nuance was lost." (P10) |
| **Glossary-building with AI suggestions** | Students who compiled term banks showed higher consistency scores (avg. +18 %). | "I used ChatGPT to propose synonyms, then built my own mini-glossary." (P7) |

The analysis revealed three instructional strategies that significantly enhanced students' translation accuracy and metalinguistic awareness: guided post-editing worksheets, back-translation loops, and glossary-building with AI support. These strategies, though simple, demonstrated a clear shift from passive AI use to reflective, learner-centred engagement.

The first strategy, guided post-editing worksheets, was particularly effective in helping students engage critically with AI-generated content. By comparing machine output with human translations, students were required to identify, reflect on, and correct linguistic mismatches. As Participant 1 stated, *"The worksheet forced me to think why the AI choice was wrong."* This shift from blind acceptance to active evaluation led to a 37% reduction in grammatical and lexical errors across students' revised drafts. The success of this method underscores the value of structured reflection and its ability to cultivate students' analytical thinking in translation tasks.


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The second strategy, back-translation loops, offered an innovative way for learners to uncover deeper semantic and pragmatic inaccuracies. By translating from the source language (L2) to the native language (L1), then back again to L2, students could observe meaning distortions or shifts in tone that AI tools often overlook.

Participant 10 commented, *"When I saw the back-translation, I realised the nuance was lost."* This process heightened students' pragmatic sensitivity, helping them recognize subtleties such as idiomatic usage, implied meaning, and context-appropriate language dimensions often flattened by machine translation.

The third strategy, glossary-building with AI suggestions, empowered students to personalize their learning while increasing lexical accuracy. Using AI tools like ChatGPT to generate synonyms and alternatives, students developed custom glossaries tailored to specific contexts or texts. Participant 7 noted, *"I used ChatGPT to propose synonyms, then built my own mini-glossary."* Students who employed this technique showed an 18% increase in consistency and term accuracy, indicating that such strategies reinforce lexical awareness and promote deeper vocabulary acquisition beyond the default outputs of translation software.

In sum, these three strategies not only improved translation outcomes but also fostered greater learner autonomy, metalinguistic reflection, and strategic awareness. Their effectiveness suggests that AI tools, when embedded within carefully designed instructional tasks, can significantly enrich the translation learning process moving students from passive users to critical co-editors and knowledge constructors.

**RQ4 – What elements should an AI-supported translation framework include?**

Highlighted key features for curriculum development. Students emphasized the need for clearer mapping between translation tasks and appropriate AI tools.

**Theme 1: Explicit Skill–Tool Mapping**

> *"Tell us which tool fits which problem idiom, register, or cohesion." (P5)*
>
> *"It would be easier if the syllabus told us exactly when to use DeepL versus ChatGPT." (P2)*
>
> *"I get confused about which tool helps with collocations and which for idioms." (P7)*


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*"Chart mapping skills to apps would save time and mistakes." (P9)*

*"Sometimes I guess the tool; half the time it's not the right one." (P12)*

**Interpretation:**

Students want clear, curriculum-level guidance that links specific AI tools to particular translation sub-skills so they can choose technology purposefully rather than by trial and error.

**Theme 2: Scaffolded Reflection Cycles** *(pre-AI draft → AI draft → guided post-edit → peer review)*

*"The reflection sheet made me see patterns in my mistakes." (P8)*

*"Drafting by hand, then checking with AI, then revising with the worksheet helped me see progress." (P1)*

*"The cycle of peer review after AI really made the differences stand out." (P4)*

*"Seeing three versions side by side showed my blind spots." (P6)*

*"Reflection logs forced me to explain why I accepted or rejected AI suggestions." (P11)*

**Interpretation:**

Multi-stage reflection builds metalinguistic awareness; students recognise errors and reasoning more clearly when they compare successive drafts and discuss choices with peers.

**Theme 3: Ethics & Academic Integrity Modules**

*"I worry plagiarism detectors are we allowed to use MT?" (P13)*

*"I'm afraid using AI might be considered cheating in academic writing." (P3)*

*"We need clear policies: can we cite the translations from ChatGPT?" (P10)*

*"Some journals ban MT; I don't want my thesis rejected." (P2)*

*"I worry that relying on AI will hide plagiarism if we don't learn proper citation." (P6)*

**Interpretation:**

Learners feel uncertain about the legitimacy and citation of AI-assisted output, signalling the need for explicit ethical guidelines and integrity training within the framework.

**Theme 4: Continuous Teacher Professional Development (PD)**

*"Lecturers also need training; sometimes they dismiss the tools completely." (P14)*

*"Teachers need workshops on the new tools; they learn along with us." (P9)*


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*"One lecturer discourages any AI, another encourages it consistency is missing." (P11)*

*"If teachers model post-editing, we understand better." (P5)*

*"Regular PD sessions would help teachers keep up with tool updates." (P1).*

**Interpretation:**

Consistent, up-to-date PD ensures teachers can model effective AI use, provide coherent guidance, and maintain alignment across courses, thereby strengthening the overall framework.

**Discussion**

The findings of this study indicate that the effectiveness of AI-assisted translation in EFL contexts is shaped less by the capabilities of the tools themselves and more by the cognitive and pedagogical conditions under which they are used. While platforms such as Google Translate, DeepL, and ChatGPT provide immediate linguistic support, their unstructured use often results in superficial engagement and uneven learning outcomes.

**1. Cognitive Constraints and the Limits of AI Support**

The persistent difficulties identified in RQ1 particularly idiomatic misinterpretation, register mismatch, and limited error-detection awareness point to underlying cognitive constraints rather than purely linguistic deficiencies. Students' reliance on literal translation reflects a tendency toward surface-level processing, where meaning is treated as direct lexical equivalence rather than contextually constructed interpretation.

This pattern can be understood through the concept of metalinguistic awareness, which involves the ability to critically reflect on language form and meaning. Prior studies have emphasized that such awareness is essential for effective translation, especially when dealing with figurative language and pragmatic nuance (Rakhman & Liu, 2024; Xu et al., 2024). However, the present findings suggest that AI tools do not inherently develop this capacity. Instead, they may obscure it by offering outputs that appear acceptable at the surface level, thereby reducing the learner's need to engage in deeper semantic analysis.

From a pedagogical standpoint, this implies that AI integration must be accompanied by explicit instruction that targets metalinguistic reflection. Without such scaffolding, learners are likely to remain dependent on procedural

translation strategies that fail to account for discourse-level meaning.

**2. AI Use and the Reshaping of Learner Autonomy**

The behavioural patterns observed in RQ2 reveal a dominant "tool-first" approach, in which AI systems function as the primary agent in the translation process. Rather than engaging in active meaning construction, students tend to accept machine-generated outputs with minimal evaluation, prioritizing efficiency over accuracy.

This shift has important implications for learner autonomy, which is traditionally associated with active decision-making and self-regulated learning. While previous research has suggested that digital tools can enhance autonomy by providing learners with greater control over their learning processes (Kim & Oh, 2023), the findings of this study complicate that assumption. In the absence of pedagogical guidance, AI tools may instead promote dependency, reduce learners' cognitive engagement and diminish their role as active language users.

At the same time, the presence of opportunistic post-editing behaviours indicates that autonomy is not entirely absent, but rather underdeveloped. When students are exposed to strategies such as comparison or back-translation, they begin to re-engage with the translation process more critically. This suggests that autonomy in AI-assisted environments is not an automatic outcome of technology use, but a pedagogically constructed capacity that must be deliberately fostered.

**3. Instructional Scaffolding as a Mechanism for Deep Learning**

The strategies identified in RQ3 guided post-editing, back-translation loops, and AI-supported glossary building demonstrate that structured instructional interventions can significantly enhance both translation accuracy and cognitive engagement. These strategies function as forms of cognitive scaffolding, enabling learners to move beyond passive consumption toward active analysis and reflection.

For instance, guided post-editing requires students to evaluate and justify linguistic choices, thereby activating higher-order thinking processes. Similarly, back-translation exposes hidden shifts in meaning, prompting learners to reconsider assumptions about equivalence and accuracy. These findings align with previous research suggesting


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that translation technologies are most effective when used as tools for reflection rather than mere output generation (Liu et al., 2023; Xu et al., 2024).

Importantly, the observed improvements in accuracy (e.g., reduction in grammatical and lexical errors) indicate that AI can support learning when embedded within tasks that require interpretation, comparison, and decision-making. This challenges the common perception that AI simplifies learning; instead, it suggests that its pedagogical value lies in its ability to stimulate deeper cognitive engagement when properly structured.

**4. Ethical Awareness and the Need for Guided AI Literacy**

The findings from RQ4 highlight a critical gap in students' understanding of the ethical and academic implications of AI use. Uncertainty regarding issues such as plagiarism, authorship, and acceptable use reflects a broader lack of digital and academic literacy in AI-mediated learning environments.

These concerns resonate with ongoing global discussions about the ethical use of AI in education, where scholars and institutions have emphasized the need for clear guidelines and responsible use frameworks (UNESCO, 2023). The present study extends this discussion by showing that, at the classroom level, ambiguity around AI use can lead to hesitation, inconsistency, and potentially inappropriate practices.

Moreover, students' demand for explicit skill–tool mapping and structured reflection cycles indicates that effective AI integration requires not only technical familiarity, but also procedural and ethical clarity. Without such guidance, learners are left to navigate complex technological environments through trial and error, which may hinder both learning outcomes and academic integrity.

**5. Reframing AI Integration as Pedagogical Design**

Taken together, the findings point to a fundamental misalignment between students' widespread use of AI tools and the limited pedagogical structures that support their use. While learners actively engage with AI technologies, their practices remain largely unguided, resulting in shallow processing and inconsistent outcomes.

This suggests that the central challenge in AI-assisted translation is not technological capability, but pedagogical design. As noted in previous studies, the


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educational value of technology depends on how it is integrated into learning environments (Susanto et al., 2022; Nguyen et al., 2025). The current findings reinforce this view by demonstrating that AI tools can either hinder or enhance learning, depending on the presence of structured guidance, reflective tasks, and clear instructional objectives.

Therefore, the integration of AI into EFL translation pedagogy should be approached as a process of instructional redesign, rather than mere tool adoption. The proposed framework emerging from this study responds to this need by aligning technological affordances with cognitive development, learner autonomy, and ethical awareness. In doing so, it offers a pathway toward more meaningful, reflective, and responsible use of AI in translation learning.

## CONCLUSIONS

This study investigated how EFL students utilize AI-based translation tools in academic contexts and explored the pedagogical implications of integrating these technologies into translation instruction. The findings revealed that although AI tools such as Google Translate, DeepL, and ChatGPT provide valuable linguistic support, students frequently encounter challenges related to idiomatic interpretation, register appropriateness, and error detection. Moreover, many participants demonstrated a tool-first approach characterized by overreliance on AI-generated outputs and limited critical evaluation, indicating that the availability of technology alone does not guarantee meaningful learning.

The study further found that instructional strategies such as guided post-editing, back-translation activities, and AI-supported glossary development can significantly enhance students' translation performance and metalinguistic awareness.

These strategies encouraged learners to engage more critically with machine-generated outputs, fostering greater autonomy, reflective thinking, and informed linguistic decision-making. The findings suggest that the educational value of AI in translation learning lies not in its capacity to automate translation tasks but in its potential to support deeper cognitive engagement when embedded within structured pedagogical practices.


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From a theoretical perspective, this study contributes to the growing body of research on AI-assisted language learning by demonstrating that metalinguistic awareness and learner autonomy function as key mediating factors in the effectiveness of AI-supported translation. The findings extend previous research by showing that the relationship between AI use and translation competence is shaped primarily by pedagogical design rather than technological capability alone.

Practically, the study proposes a structured human–AI collaborative framework that incorporates explicit skill–tool mapping, guided reflection cycles, ethical AI literacy, and continuous teacher professional development. This framework offers a curriculum-oriented model for integrating AI into EFL translation instruction while promoting responsible, reflective, and context-sensitive use of technology.

Despite its contributions, this study is limited by its relatively small sample size and focus on English Education students from universities in a single Indonesian city. Future research may examine the applicability of the proposed framework across different educational levels, disciplinary contexts, and cultural settings, as well as investigate its long-term impact on students' translation competence and AI literacy development.

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