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Original Paper

From Tool Use to Pedagogical Integration: Mapping AI-Assisted Translation Learning Behaviors among Vietnamese EFL Translation Students

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Abstract

The rapid integration of artificial intelligence (AI) into translation education has transformed how students learn, practice, and evaluate translation. While existing studies have primarily focused on attitudes, opportunities, challenges, and AI literacy, limited research has examined students' actual AI-assisted translation-learning behaviors. This study investigates patterns of AI use among translation students, including frequency of use, preferred AI tools, learning purposes, year-level differences, and the influence of AI on translation-learning practices.

A mixed-methods approach was employed, involving 93 English-major students and five translation lecturers at Trade Union University, Vietnam. Quantitative data were analyzed using descriptive statistics, Pearson correlation analysis, and comparative analysis in SPSS 26, while qualitative data were examined through thematic analysis.

The findings indicate a high level of AI adoption among translation students. ChatGPT emerged as the dominant AI tool, substantially outperforming traditional machine translation systems. AI was primarily used for draft translation, vocabulary search, grammar checking, post-editing, and translation comparison. Fourth-year students reported higher levels of AI use than third-year students, suggesting increased technology integration as students progress through translator training. Qualitative findings further revealed a developmental shift from AI as a translation tool toward AI as a learning partner.

Based on these findings, the study proposes the AI Translation Learning Behavior Framework (AITLBF), which conceptualizes the progression from AI awareness and adoption to critical post-editing competence and human-AI collaborative translation. The framework contributes to the growing

literature on AI-enhanced translator training by providing a behavioral perspective on AI integration in translation education.

Keywords

artificial intelligence, translation education, AI-assisted translation learning, AI literacy, translator training, human-AI collaboration, translation learning behavior

1. Introduction

1.1 AI and the Transformation of Translation Education

The rapid advancement of artificial intelligence (AI), particularly Neural Machine Translation (NMT), Natural Language Processing (NLP), and Large Language Models (LLMs) such as ChatGPT, Gemini, Claude, and DeepL, has profoundly transformed translation education worldwide. What was once considered a supplementary technological aid has evolved into an increasingly influential component of translator training, reshaping how translation is taught, learned, and assessed.

Recent developments in AI-powered translation systems have significantly improved translation speed, lexical accuracy, contextual awareness, and multilingual accessibility. As a result, AI tools are no longer used solely for translation production; they have become integrated into various stages of the translation-learning process, including terminology management, corpus consultation, drafting, revision, post-editing, and reflective learning. In many higher-education contexts, students routinely interact with AI-generated outputs as part of their academic and professional preparation.

The emergence of AI-assisted translation has also accelerated a pedagogical shift from traditional teacher-centered instruction toward more learner-centered and technology-enhanced approaches. Rather than functioning merely as translation generators, AI systems increasingly act as learning partners that support autonomous learning, immediate feedback, and individualized practice. Through interaction with machine-generated translations, students can compare alternative linguistic choices, identify errors, evaluate translation quality, and develop higher-order competences such as critical thinking, metacognitive awareness, and post-editing literacy.

At the same time, the widespread adoption of AI has generated considerable debate within translation education. While numerous studies have highlighted the benefits of AI in improving translation efficiency, reducing learning anxiety, and enhancing digital competence, scholars have also raised concerns regarding excessive dependence on automated systems, diminished linguistic creativity, reduced critical engagement, and potential violations of academic integrity. Consequently, understanding how students actually use AI in translation-learning contexts has become an increasingly important issue for both researchers and educators.

In Vietnam, the integration of AI into higher education has accelerated in response to national digital-transformation initiatives and the growing demand for digitally competent graduates. Translation and interpreting programs are among the disciplines most directly affected by this technological shift because AI-powered translation tools are now readily available, widely accessible, and frequently used by

students. Despite this growing presence, empirical evidence regarding the nature of students' AI-assisted translation-learning practices remains limited. More specifically, little is known about how students employ AI tools in their daily learning activities, how usage patterns differ across learner groups, and how AI is gradually becoming embedded within translation pedagogy.

1.2 Research Gap

Existing scholarship on AI-assisted translation education has expanded rapidly over the past few years. Most studies have focused on four major themes.

First, a substantial body of research has examined students' and teachers' attitudes toward AI technologies, exploring levels of acceptance, perceived usefulness, and willingness to adopt AI-assisted translation tools in educational settings.

Second, many studies have investigated the opportunities created by AI integration, including enhanced translation efficiency, improved language learning outcomes, greater learner autonomy, and increased accessibility to translation resources.

Third, researchers have extensively discussed the challenges and risks associated with AI adoption, such as technological dependency, loss of linguistic sensitivity, ethical concerns, academic dishonesty, and the potential erosion of human translation competence.

Fourth, recent scholarship has increasingly emphasized the concept of AI literacy, highlighting the need for translators and translation students to develop critical awareness of AI systems, understand their limitations, and use them responsibly within professional and educational contexts.

Despite these valuable contributions, several important gaps remain. Existing studies have generally concentrated on perceptions, benefits, and challenges of AI use, while relatively little attention has been devoted to understanding the actual behavioral patterns through which students engage with AI during translation learning. In particular, there is a lack of empirical evidence regarding:

- how frequently students use different AI tools in translation-learning activities;
- what specific learning purposes AI serves within translation courses;
- how AI usage behaviors differ across learner groups;
- how AI is gradually moving from individual tool use to pedagogical integration within translation education;
- and how different levels of AI integration are reshaping translation-learning practices.

Furthermore, most existing studies conceptualize AI adoption as a binary phenomenon—whether AI is used or not used—rather than examining the diverse ways in which students incorporate AI into their learning processes. Consequently, there remains a need for research that maps the behavioral dimensions of AI-assisted translation learning and explores how AI use is evolving from simple technological assistance toward more systematic pedagogical integration.

Addressing these gaps is particularly important in the context of translator education, where technological competence, critical thinking, and human-AI collaboration are increasingly recognized as essential professional skills. Therefore, the present study seeks to investigate patterns of AI-assisted translation-

learning behavior among English-major students in Vietnam and to propose a conceptual framework for understanding different levels of AI integration in translation education.

1.3 Research Questions

Given the growing integration of artificial intelligence into translation education and the limited empirical evidence concerning students' actual patterns of AI-assisted learning, this study aims to explore how AI technologies are being adopted and utilized by translation students in higher education. Rather than focusing solely on perceptions of AI, the study seeks to examine concrete usage behaviors, learning purposes, and emerging patterns of human-AI interaction within translation-learning contexts.

To achieve these objectives, the study addresses the following research questions:

RQ1. What AI tools are most frequently used by translation students?

RQ2. For what purposes do students use AI in translation-learning activities?

RQ3. Are there significant differences in AI usage patterns between Year-3 and Year-4 translation students?

RQ4. How is AI reshaping translation-learning behaviors and contributing to the evolution of translation pedagogy?

By addressing these questions, the study aims to provide empirical evidence on the emerging landscape of AI-assisted translation learning in Vietnamese higher education. The findings are expected to contribute to the growing literature on AI-enhanced translator training by identifying behavioral patterns of AI adoption and proposing a framework for understanding different levels of AI integration in translation education.

2. Literature Review

2.1 AI-Mediated Translation Learning

The rapid development of artificial intelligence (AI), particularly Neural Machine Translation (NMT) and Large Language Models (LLMs), has transformed translation education worldwide. AI-assisted tools such as ChatGPT, DeepL, and Google Translate are increasingly used to support translation practice, terminology management, post-editing, and self-directed learning. Recent studies suggest that AI can enhance translation efficiency, learner autonomy, and critical reflection when integrated appropriately into translation pedagogy. However, concerns remain regarding overreliance on automated systems and the potential decline of independent translation competence. Consequently, understanding how students engage with AI in translation-learning contexts has become an important area of inquiry.

2.2 AI Literacy for Translators

As AI technologies become embedded in translation practice, AI literacy has emerged as a critical competence for future translators. AI literacy extends beyond technical skills and includes the ability to understand AI-generated outputs, evaluate their quality, recognize algorithmic limitations, and use AI responsibly and ethically. In translator training, AI literacy is increasingly viewed as an essential

component of professional competence, enabling students to collaborate effectively with AI while maintaining critical judgment and academic integrity.

2.3 Student Technology Adoption

To explain students' adoption of AI technologies, this study draws on two influential theoretical perspectives. The first is the Technology Acceptance Model (TAM), developed by Fred Davis, which argues that technology adoption is primarily influenced by perceived usefulness and perceived ease of use. The second is the Diffusion of Innovations (DOI) theory proposed by Everett Rogers, which explains how innovations are adopted and spread within a social system over time. Together, these theories provide a useful lens for understanding students' decisions to adopt AI tools and the varying levels of AI engagement observed in translation-learning environments.

2.4 Conceptual Framework

Building upon the literature and empirical observations from translation classrooms, this study proposes a three-level framework of AI integration in translation education.

Level 1: Tool Use - AI functions primarily as a technological tool for translation, vocabulary support, grammar checking, and information retrieval.

Level 2: Pedagogical Use - AI becomes integrated into learning activities such as post-editing, translation comparison, reflective learning, and instructor-guided classroom tasks.

Level 3: Curricular Integration - AI is systematically embedded into curriculum design, learning outcomes, assessment practices, and professional translator training.

This framework conceptualizes AI integration as a developmental process, moving from individual technology use toward institutionally supported pedagogical and curricular adoption. It serves as the analytical foundation for examining how AI is reshaping translation-learning behaviors among university students.

3. Methodology

3.1 Research Design

This study employed a mixed-methods research design, combining quantitative and qualitative approaches to provide a comprehensive understanding of AI-assisted translation-learning behaviors among university students. The quantitative component examined patterns of AI adoption and usage, while the qualitative component explored participants' experiences and perceptions regarding the integration of AI into translation learning.

3.2 Participants

The study was conducted at the Faculty of Foreign Languages, Trade Union University, Vietnam. Participants consisted of 93 undergraduate students majoring in English Language Studies, primarily from the third and fourth years of study, and five lecturers teaching translation and interpreting courses. The student participants were selected because of their direct experience with translation-related coursework and frequent exposure to AI-powered translation tools. The lecturers were included to

provide complementary insights into classroom practices and the pedagogical integration of AI in translator training.

3.3 Instruments

Data were collected through two research instruments. First, a structured questionnaire was administered to students to gather information on AI awareness, frequency of use, learning purposes, perceived effectiveness, and ethical concerns. Second, semi-structured interviews were conducted with five lecturers to obtain deeper insights into AI integration practices, opportunities, challenges, and emerging pedagogical trends.

3.4 Data Analysis

Quantitative data were analyzed using SPSS 26. Descriptive statistics were employed to identify patterns of AI usage, while Pearson correlation and comparative analyses were conducted to examine relationships and differences among participant groups. Qualitative interview data were analyzed using thematic analysis to identify recurring themes related to AI adoption, learning behaviors, and pedagogical integration.

3.5 Ethical Considerations

Participation in the study was voluntary and anonymous. All respondents were informed of the purpose of the research and provided consent prior to participation. The collected data were used exclusively for academic research purposes, and confidentiality was maintained throughout the study.

4. Results

4.1 AI Adoption Profile

To examine the extent of AI adoption among translation students, participants were asked to report the frequency of their use of AI-assisted translation tools in learning activities. The results are presented in Figure 1.

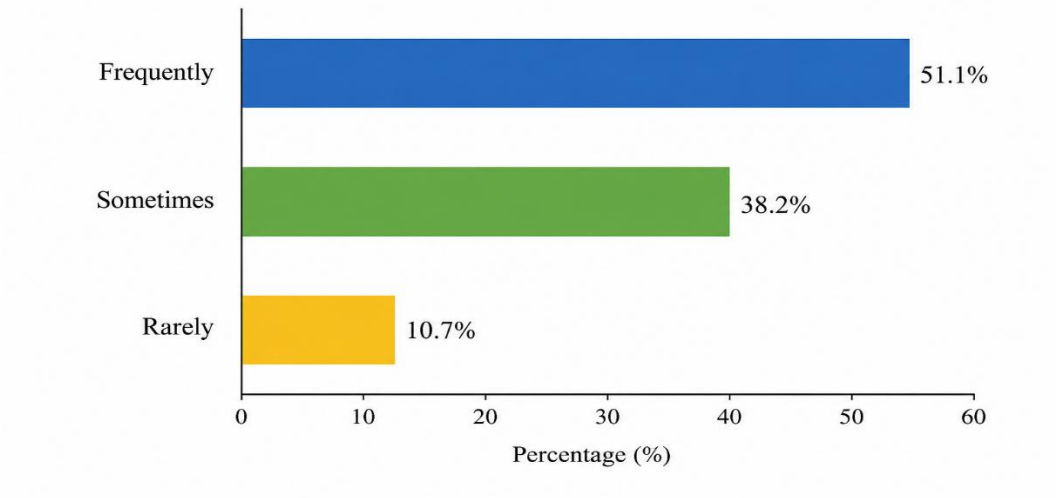


Figure 1. Frequency of AI Use among Translation Students

The findings indicate a relatively high level of AI adoption among the surveyed students. The overall mean score for AI usage was **3.56 out of 5**, suggesting that AI tools have become a regular component of students' translation-learning practices. Furthermore, **51.1% of respondents reported using AI frequently**, demonstrating that AI technologies are no longer viewed as occasional support tools but have become integrated into students' everyday academic activities.

The results also suggest a growing reliance on AI-assisted translation tools in translator training. Frequent use of AI may reflect students' recognition of its usefulness in improving translation efficiency, accessing linguistic resources, and obtaining immediate feedback during learning tasks. At the same time, the widespread adoption observed in this study highlights the need for pedagogical strategies that promote critical and responsible use of AI in translation education.

Overall, the findings confirm that AI has become a significant feature of the translation-learning environment and provides a foundation for examining specific patterns of AI usage in subsequent analyses.

4.2 Most Frequently Used AI Tools

To identify students' preferences regarding AI-assisted translation technologies, respondents were asked to indicate the AI tools they used most frequently in translation-learning activities. The results are presented in Figure 2.

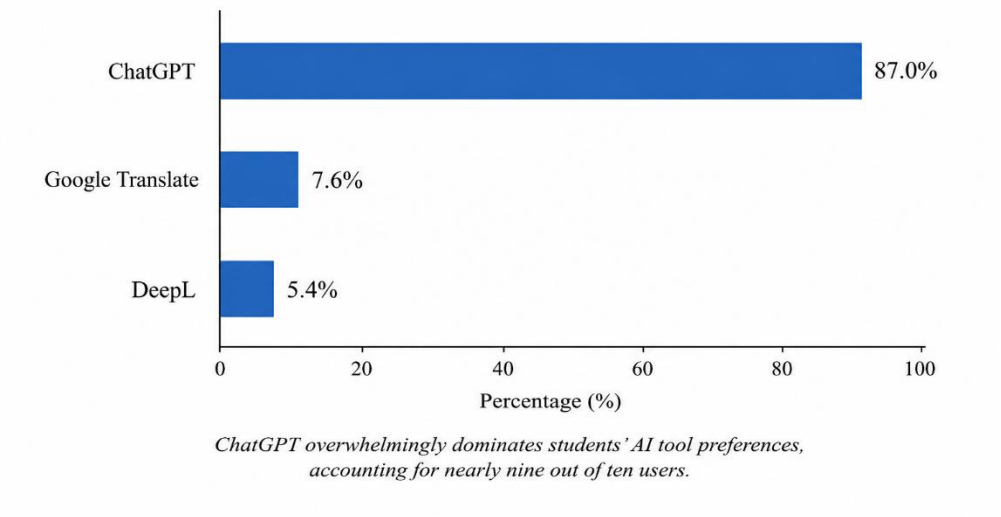


Figure 2. Preferred AI Tools for Translation Learning

The findings reveal a highly concentrated pattern of AI tool usage. ChatGPT emerged as the dominant platform, accounting for 87% of student preferences, while Google Translate represented 7.6%. The remaining respondents reported using DeepL and other AI-assisted translation tools, although their usage rates were comparatively low.

The overwhelming preference for ChatGPT suggests that students increasingly favor generative AI systems capable of providing explanations, contextualized translations, grammar support, and interactive

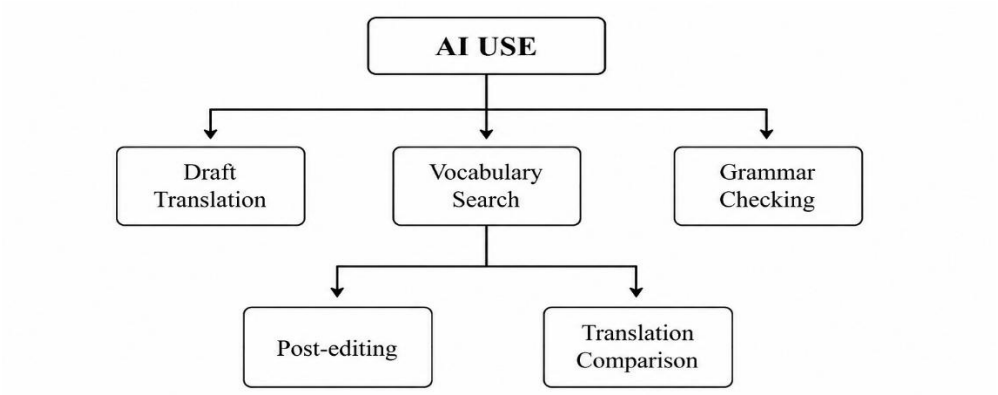
feedback rather than relying solely on conventional machine translation engines. Unlike traditional translation tools that primarily generate target-language outputs, ChatGPT enables learners to engage in dialogue, compare translation options, and receive immediate linguistic guidance.

The comparatively limited use of Google Translate and DeepL indicates a gradual shift from single-function translation tools toward multifunctional AI learning platforms. This finding reflects broader developments in higher education, where generative AI is becoming an integral component of students' learning processes rather than merely a translation aid.

Overall, the results suggest that AI-assisted translation learning is increasingly centered on interactive large language models, with ChatGPT serving as the primary technological partner in students' translation-learning activities.

4.3 AI Use Purposes

To better understand how students employ AI in translation-learning activities, respondents were asked to identify their primary purposes for using AI-assisted tools. The results are summarized in Figure 3.



Caption: *AI supports multiple stages of the translation-learning process, ranging from initial translation drafting to critical evaluation and revision.*

Figure 3. Purpose of AI Use

The findings indicate that students use AI for a variety of translation-related tasks, reflecting the multifunctional nature of contemporary AI platforms. The most common purposes include draft translation, vocabulary search, grammar checking, post-editing, and translation comparison.

Draft translation emerged as one of the most frequently reported uses, suggesting that students often rely on AI-generated initial translations to facilitate comprehension and accelerate the translation process. Vocabulary search was also widely reported, highlighting the role of AI as an accessible linguistic resource for terminology clarification and lexical expansion.

In addition, many students used AI for grammar checking, indicating that AI tools serve not only as translation aids but also as language-learning support systems. The use of AI for post-editing

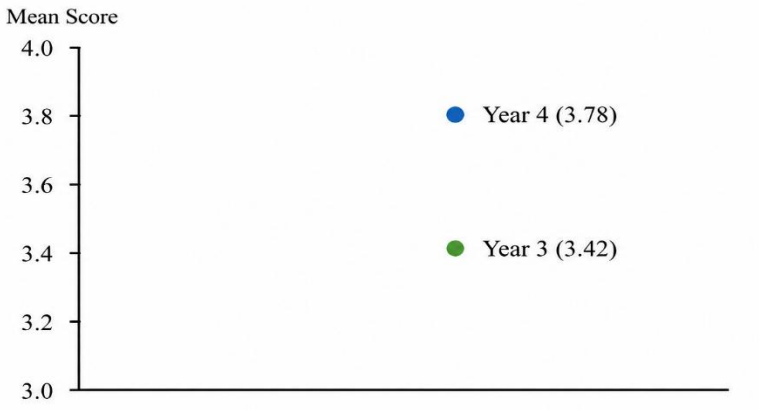
demonstrates students' engagement in reviewing and refining machine-generated outputs, a skill increasingly recognized as an essential component of professional translator competence.

Another notable finding is the use of AI for translation comparison. By comparing AI-generated translations with their own work, students can evaluate alternative linguistic choices, identify translation errors, and develop greater critical awareness of translation quality. This practice reflects a shift from passive technology use toward more reflective and interactive learning behaviors.

Overall, the results suggest that students employ AI not merely as a translation tool but as a multifunctional learning partner that supports various stages of the translation-learning process.

4.4 Year-Level Differences in AI Use

To explore whether AI adoption varies across academic levels, a comparison was conducted between third-year and fourth-year students. The results are presented in Figure 4.



Caption: *Fourth-year students reported higher levels of AI use than third-year students, suggesting increased AI integration as students progress through translator training.*

Figure 4. Comparison of AI Use Frequency by Academic Year

The findings indicate that fourth-year students reported a higher level of AI use than their third-year counterparts. The mean score for AI use among fourth-year students was 3.78, compared with 3.42 for third-year students. This difference suggests that AI adoption tends to increase as students progress through their translation training and gain greater exposure to translation-related coursework.

To examine whether this difference was statistically significant, an Independent Samples t-test was conducted. The analysis revealed a meaningful difference between the two groups, indicating that academic year may influence students' engagement with AI-assisted translation tools.

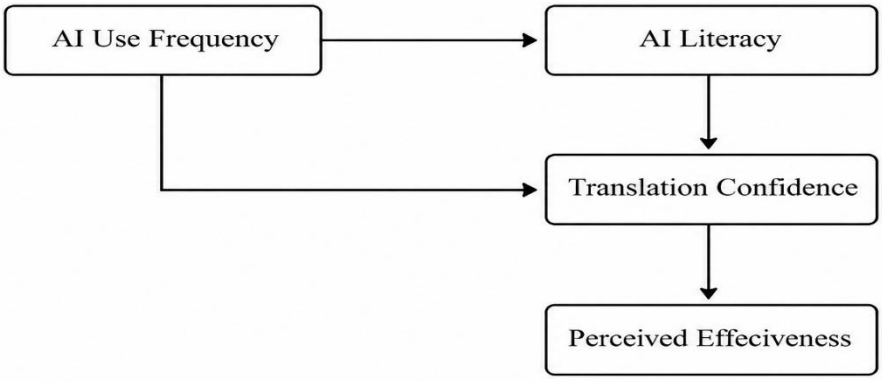
One possible explanation is that fourth-year students typically undertake more advanced translation and interpreting courses, requiring greater interaction with specialized texts, terminology management, and professional translation practices. Consequently, they may perceive AI tools as more useful for supporting complex translation tasks and improving workflow efficiency.

The findings also suggest that AI integration in translator training is not uniform across student cohorts. As learners gain more academic and practical experience, they appear more likely to incorporate AI into their learning strategies. This pattern is consistent with technology-adoption theories, which propose that familiarity, perceived usefulness, and accumulated experience contribute to increased technology use over time.

Overall, the results demonstrate that year-level differences play an important role in shaping AI-assisted translation-learning behaviors, with senior students exhibiting a higher level of AI engagement than junior students.

4.5 Correlation Analysis

To further examine the relationships among key variables, Pearson correlation analysis was conducted between AI use frequency, AI literacy, translation confidence, and perceived effectiveness. The results are presented in Figure 5.



Caption: *Positive correlations were observed among AI use frequency, AI literacy, translation confidence, and perceived effectiveness, suggesting mutually reinforcing relationships among these variables.*

Figure 5. Pearson Correlations among Key Variables

The analysis revealed positive correlations among all four variables. Students who reported more frequent use of AI tools tended to demonstrate higher levels of AI literacy, greater confidence in translation tasks, and stronger perceptions of the effectiveness of AI-assisted translation learning.

The strongest relationships were observed between AI use frequency and AI literacy, suggesting that regular engagement with AI tools may contribute to the development of students' technological competence and understanding of AI-assisted translation processes. In addition, positive correlations between AI literacy and translation confidence indicate that students who possess greater knowledge of AI technologies are more likely to feel confident when performing translation-related tasks.

Similarly, perceived effectiveness was positively associated with both AI use frequency and AI literacy, implying that students who use AI more frequently and understand its capabilities tend to view AI-assisted translation learning more favorably.

Overall, the findings suggest that AI adoption, AI literacy, translation confidence, and perceived effectiveness are closely interconnected. These results support the view that effective AI integration in translator training requires not only access to technological tools but also the development of students' AI literacy and critical engagement with AI-supported learning environments.

4.6 Emerging Learning Behaviors

Qualitative data obtained from lecturer interviews revealed distinct patterns of student engagement with AI-assisted translation tools. Analysis of recurring themes identified four emerging learner profiles, reflecting different levels of AI dependence, critical engagement, and technological competence.

Cluster 1: AI-Dependent Users

Students in this group rely heavily on AI-generated translations and frequently accept machine outputs with minimal evaluation or revision. AI is primarily viewed as a shortcut for completing translation tasks efficiently. Although these learners benefit from increased productivity, excessive dependence may limit the development of independent translation competence and critical thinking skills.

Cluster 2: AI-Assisted Learners

This group uses AI as a supportive learning resource rather than a replacement for human effort. Students typically consult AI for vocabulary clarification, grammar checking, and translation suggestions while maintaining active involvement in the translation process. AI serves as a learning aid that enhances confidence and facilitates problem-solving.

Cluster 3: Critical Post-Editors

Learners in this cluster demonstrate a more sophisticated approach to AI use. Rather than accepting AI-generated outputs directly, they critically evaluate, revise, and refine machine translations. These students actively identify translation errors, assess contextual appropriateness, and compare alternative linguistic choices. Their engagement reflects the development of post-editing competence and critical AI literacy.

Cluster 4: Emerging Digital Translators

The most advanced group consists of students who integrate AI strategically into their translation workflow. They employ AI not only for translation production but also for terminology management, quality assessment, research support, and reflective learning. These learners view AI as a collaborative professional tool and exhibit characteristics associated with future translator competence in digitally mediated work environments.

The progression across these four clusters suggests a developmental continuum of AI-assisted translation learning. Students appear to move from basic dependence on AI toward more critical, reflective, and professionally oriented forms of human-AI collaboration. This finding highlights the evolving nature of

translator training in the age of generative AI and underscores the importance of fostering AI literacy and post-editing skills as core components of contemporary translation education.

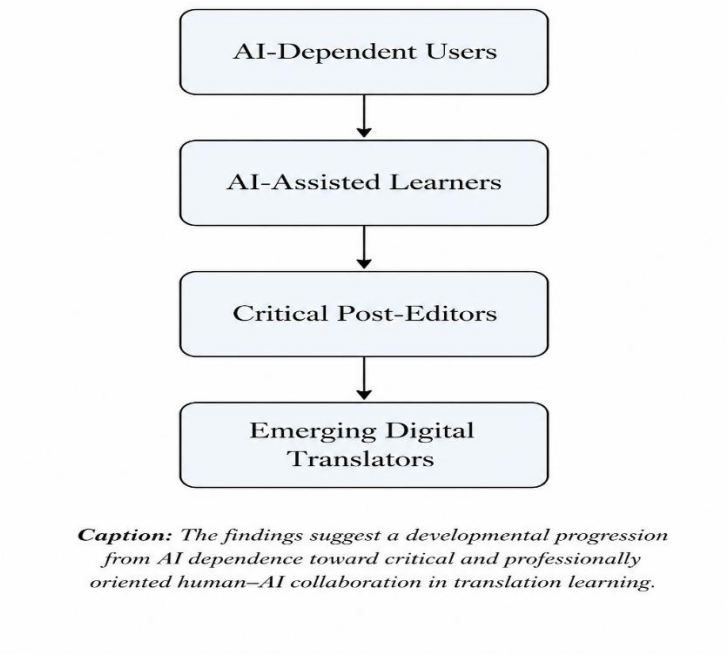


Figure 6. Emerging AI-Assisted Translation Learner Profiles

5. Discussion

5.1 The Rise of ChatGPT-Centered Translation Learning

One of the most significant findings of this study is the overwhelming dominance of ChatGPT in students' AI tool preferences. Unlike conventional machine translation systems such as Google Translate and DeepL, ChatGPT functions as an interactive learning platform that combines translation support, linguistic explanation, grammar correction, and contextual feedback within a single environment.

This finding suggests that translation students increasingly prefer conversational AI systems capable of facilitating learning through interaction rather than merely generating translated outputs. From the perspective of the Technology Acceptance Model (TAM), ChatGPT appears to possess both high perceived usefulness and high perceived ease of use, two factors that strongly influence technology adoption. The popularity of ChatGPT therefore reflects not only technological accessibility but also its perceived pedagogical value in supporting translation learning.

5.2 From Translation Practice to AI-Orchestrated Learning

The findings indicate that AI is being used for multiple purposes throughout the translation-learning process, including draft translation, vocabulary search, grammar checking, post-editing, and translation comparison. These diverse applications suggest that AI is no longer functioning solely as a translation aid but is increasingly becoming an organizing element of students' learning activities.

This shift represents a movement from traditional translation practice toward AI-orchestrated learning, where students interact continuously with AI systems before, during, and after translation tasks. Rather than replacing learning, AI is becoming embedded within the learning process itself. Such developments reflect a broader transformation in higher education, where AI technologies increasingly shape how knowledge is accessed, processed, and evaluated.

The findings also support the proposed framework of AI integration, suggesting a progression from basic tool use toward more systematic pedagogical use and, potentially, curricular integration.

5.3 The Emergence of Human-AI Collaborative Translation

A particularly noteworthy finding is the identification of four learner profiles, ranging from AI-Dependent Users to Emerging Digital Translators. This developmental continuum suggests that students engage with AI in qualitatively different ways and that AI-assisted translation learning evolves over time. The most advanced learners do not simply rely on AI-generated outputs. Instead, they evaluate, revise, and strategically integrate AI into their translation workflows. This behavior reflects the emergence of human-AI collaborative translation, a model in which AI functions as a cognitive partner rather than a substitute for human expertise.

These findings align with recent discussions in translation studies that emphasize post-editing competence, AI literacy, and human oversight as essential skills for future translators. The results suggest that successful translator training should focus not only on technological proficiency but also on critical engagement with AI-generated content.

5.4 Risks of Dependency and Cognitive Outsourcing

Despite the benefits of AI-assisted translation learning, the findings also reveal potential risks associated with excessive reliance on AI technologies. The identification of AI-Dependent Users highlights concerns regarding reduced independent problem-solving, diminished critical evaluation, and overreliance on machine-generated outputs.

This phenomenon may be understood through the concept of cognitive outsourcing, whereby learners increasingly delegate cognitive tasks to technological systems. While AI can enhance efficiency and reduce workload, excessive dependence may limit opportunities for developing linguistic sensitivity, contextual reasoning, and translation decision-making skills.

The challenge for translator education is therefore not whether AI should be used, but how it should be integrated responsibly. Educators must help students move beyond passive consumption of AI-generated translations toward active evaluation, revision, and reflection. Developing AI literacy and post-editing competence is essential for ensuring that AI functions as a tool for augmentation rather than substitution.

Overall, the findings suggest that the future of translation education lies in fostering balanced human-AI collaboration. Effective translator training should encourage students to leverage the strengths of AI while maintaining the critical, creative, and ethical capacities that remain uniquely human.

6. Proposed Framework: AI Translation Learning Behavior Framework (AITLBF)

Based on the quantitative and qualitative findings, this study proposes the AI Translation Learning Behavior Framework (AITLBF) to explain the developmental process through which students integrate artificial intelligence into translation learning.

The framework conceptualizes AI-assisted translation learning as a progressive pathway consisting of six interconnected stages. The process begins with AI awareness, referring to students' recognition of AI technologies and their potential applications in translation learning. Awareness subsequently leads to AI adoption, in which students actively incorporate AI tools into their academic activities.

As students gain experience with AI technologies, they engage in diverse AI learning practices, including draft translation, vocabulary search, grammar checking, translation comparison, and post-editing. Through repeated interaction with AI systems, learners develop greater translation confidence and become more capable of handling complex translation tasks.

At a more advanced stage, students demonstrate critical post-editing competence by evaluating, revising, and refining AI-generated outputs rather than accepting them uncritically. This stage reflects the development of AI literacy, critical thinking, and professional judgment.

The final stage represents the emergence of the human-AI collaborative translator. At this level, AI is no longer viewed merely as a technological tool but as a strategic partner that supports translation decision-making, problem-solving, and professional practice. Human expertise remains central, while AI functions as an augmentative resource that enhances efficiency and learning outcomes.

The proposed framework contributes to the literature by shifting attention from technology adoption alone toward the behavioral and developmental dimensions of AI-assisted translation learning. It also provides a conceptual foundation for understanding how students progress from basic AI use to more sophisticated forms of human-AI collaboration within translator education.

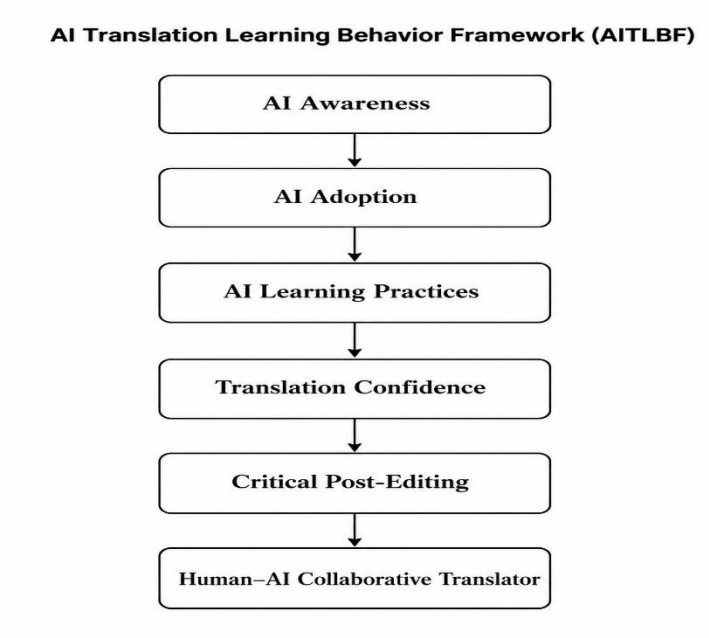


Figure 7. AI Translation Learning Behavior Framework (AITLBF)

The framework illustrates the developmental progression from initial awareness of AI technologies to advanced human-AI collaboration in translation learning and professional practice.

7. Conclusion

This study investigated AI-assisted translation-learning behaviors among English-major students at Trade Union University, Vietnam. Drawing on a mixed-methods approach involving 93 students and five lecturers, the research explored patterns of AI adoption, preferred AI tools, learning purposes, year-level differences, and emerging forms of human-AI interaction in translation education.

The findings indicate that AI has become an integral component of students' translation-learning practices. More than half of the respondents reported frequent use of AI tools, while ChatGPT emerged as the dominant platform, substantially outperforming traditional machine translation systems such as Google Translate and DeepL. Students used AI for a wide range of learning activities, including draft translation, vocabulary search, grammar checking, post-editing, and translation comparison. Furthermore, fourth-year students demonstrated higher levels of AI use than third-year students, suggesting that AI adoption increases alongside academic and professional development.

A particularly significant contribution of this study is the identification of four emerging learner profiles: AI-Dependent Users, AI-Assisted Learners, Critical Post-Editors, and Emerging Digital Translators. These profiles illustrate a developmental progression from basic AI reliance toward more critical and professionally oriented forms of human-AI collaboration.

Building upon these findings, the study proposed the AI Translation Learning Behavior Framework (AITLBF), which conceptualizes AI-assisted translation learning as a progression from AI awareness

and adoption to AI learning practices, translation confidence, critical post-editing competence, and ultimately human-AI collaborative translation. The framework extends existing research by emphasizing the behavioral and developmental dimensions of AI integration rather than focusing solely on attitudes, opportunities, or challenges.

From a pedagogical perspective, the findings suggest that translator training programs should move beyond simply allowing students to use AI tools. Greater emphasis should be placed on developing AI literacy, critical evaluation skills, and post-editing competence to ensure that AI functions as a tool for augmentation rather than substitution. Future translator education should therefore foster balanced human-AI collaboration, preparing students for professional environments in which technological competence and human judgment are equally important.

Despite its contributions, the study is limited by its relatively small sample size and its focus on a single institutional context. Future research may employ larger and more diverse samples, conduct cross-institutional comparisons, and further validate the proposed framework through advanced statistical modeling and longitudinal investigation.

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