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MACHINE TRANSLATION POST-EDITING COMPETENCE IN THE AGE OF GENERATIVE AI: A CORPUS-BASED INVESTIGATION OF STUDENT TRANSLATORS' SKILLS

The main aim of the article is to investigate how translation students interact with AI-generated translations and examines the relationship between AI literacy and post-editing performance. Using a corpus-based mixed-methods approach, the study compares human translation, neural machine translation post-editing, and generative AI post-editing. The findings reveal that generative AI improves fluency and lexical diversity but introduces AI-specific challenges, including hallucinations and contextual distortions. Statistical analysis demonstrates that AI literacy, critical evaluation skills, and prompt formulation abilities significantly influence post-editing quality. The study proposes an AI-enhanced MTPE competence framework integrating linguistic, technological, evaluative, and collaborative dimensions. The results contribute to current discussions on translator competence and provide practical recommendations for translator education in AI-mediated environments.

The study employs a mixed-methods research design combining corpus linguistics, quantitative statistical analysis, and qualitative thematic analysis. Data were collected from 60 undergraduate and graduate translation students divided into three groups: Human Translation (HT), Neural Machine Translation Post-Editing (NMTPE), and Generative AI Post-Editing (GAI-PE). The learner corpus consisted of approximately 90,000 words. Translation quality, error frequency, lexical diversity, and AI literacy indicators were analyzed using corpus tools and statistical procedures.

The study expands traditional translation competence models by incorporating AI literacy, prompt engineering, hallucination detection, and human–AI collaboration as essential dimensions of MTPE competence. Unlike previous studies focusing mainly on translation quality and productivity, this research examines how AI-related competencies influence student translators' performance in generative AI environments.

The findings indicate that generative AI enhances translation fluency and lexical richness while simultaneously creating risks associated with factual inaccuracies and hallucinations. AI literacy emerged as a significant predictor of post-editing performance, highlighting the growing importance of critical evaluation skills in translator training. The study concludes that future translator education should integrate AI literacy, prompt engineering, and critical assessment strategies to prepare students for technology-rich professional environments.

Keywords: machine translation post-editing, generative artificial intelligence, AI literacy, translation competence, corpus linguistics, translator education.

Introduction. The rapid development of artificial intelligence (AI) technologies has transformed translation practices and reshaped the professional role of translators. Machine translation (MT) systems have evolved considerably during the last decade, particularly following the widespread adoption of neural machine transla-

tion (NMT), which significantly improved translation fluency and linguistic accuracy (Yamada, 2019: 87–106). More recently, generative artificial intelligence (GenAI) systems based on large language models (LLMs), such as ChatGPT, Gemini, and Claude, have introduced new possibilities for translation support through interactive

dialogue, contextual adaptation, and content generation (Kasneji et al., 2023).

Unlike conventional MT systems that primarily produce target-language equivalents, generative AI tools can explain translation choices, suggest alternatives, revise stylistic inconsistencies, and respond to user prompts in real time (Fu & Liu, 2024). As a result, translators increasingly interact with AI not merely as users of technology but as evaluators and supervisors of machine-generated content. This transformation has generated new demands for translator competence and raised important questions regarding the skills required for successful human–AI collaboration (Prieto Ramos, 2024).

Within translation studies, machine translation post-editing (MTPE) has emerged as a central professional activity. MTPE involves revising machine-generated translations to achieve acceptable standards of quality, accuracy, and communicative effectiveness (Rico Pérez, 2024: 26–47). Although MTPE has become common practice in professional translation environments, the emergence of generative AI has expanded the scope of post-editing activities. Translators must now evaluate AI-generated outputs critically, identify hallucinations, verify factual information, and formulate effective prompts to improve translation quality (Algaraady & Mahyoob, 2025).

Despite growing scholarly interest in AI-assisted translation, empirical studies examining the relationship between AI literacy and MTPE competence remain relatively limited. Existing research has focused primarily on translation quality, productivity, user attitudes, and technological acceptance (Peng et al., 2024; Zhang, Li, & Wu, 2025). Less attention has been paid to the evolving competence profile required for effective interaction with generative AI systems. The present study seeks to address this gap by investigating how AI literacy influences post-editing performance among translation students.

The main aim of the article is to investigate the interaction of translation students with AI-generated translations and to examine the impact of AI literacy on machine translation post-editing performance. The study also seeks to compare human translation, neural machine translation post-editing, and generative AI post-editing in order to identify emerging competencies required in AI-mediated translation environments.

The novelty of the article is in its reconceptualization of machine translation post-editing competence within the context of generative artificial intelligence. The study extends traditional translation competence frameworks by integrating AI literacy, prompt engineering, hallucination detection, and

human–AI collaboration as key components of contemporary post-editing competence, while examining their influence on student translators' performance.

The main text. Translation Competence in the Age of Generative AI

Translation competence has traditionally been conceptualized as a multidimensional construct encompassing linguistic, intercultural, strategic, and technological abilities. Contemporary competence frameworks, including the European Master's in Translation (EMT) model, emphasize technological competence as an essential component of professional translator education (EMT Expert Group, 2022).

The increasing integration of AI into translation workflows has prompted scholars to reconsider traditional competence models. Prieto Ramos (2024) argues that translator competence must now include AI awareness, critical evaluation skills, and the ability to collaborate effectively with intelligent systems. Similarly, Biel (2024) suggests that AI literacy should be viewed as a core professional competency rather than a supplementary technological skill.

AI literacy refers to the ability to understand, evaluate, and interact effectively with artificial intelligence systems (Long & Magerko, 2020; Ng et al., 2021). In translation contexts, AI literacy includes knowledge of AI capabilities and limitations, awareness of ethical considerations, and the ability to assess the reliability of machine-generated content (Kasneji et al., 2023). These competencies are increasingly important because generative AI systems may produce linguistically fluent but factually inaccurate translations.

Research has demonstrated that users with higher levels of AI literacy are generally more successful in identifying translation errors, evaluating machine output critically, and making informed post-editing decisions (Zhao et al., 2023). Consequently, AI literacy is becoming a crucial determinant of successful MTPE performance.

Machine Translation Post-Editing and Human–AI Collaboration

Machine translation post-editing has undergone substantial transformation since the introduction of neural machine translation technologies. Early MTPE research focused primarily on productivity gains, cognitive effort, and translation quality (Koponen, 2016: 131–148). More recent studies emphasize the collaborative nature of AI-assisted translation, viewing translators and AI systems as partners in a shared cognitive process (O'Brien, 2012; Kasneji et al., 2023).

Generative AI systems contribute speed, linguistic fluency, and pattern recognition, while human translators provide cultural knowledge, contextual understanding, and evaluative judgment (Ng et al., 2021).

This division of responsibilities creates a new translation ecosystem in which human expertise remains essential despite technological advances.

However, generative AI also introduces unique challenges. One of the most frequently discussed issues is hallucination, defined as the generation of plausible but inaccurate or fabricated information (Zhao et al., 2023). Hallucinations may appear linguistically convincing and therefore remain undetected by inexperienced users. Such errors can have serious consequences, particularly in specialized domains such as legal, medical, and technical translation.

Another concern is automation bias, which refers to the tendency of users to overtrust automated systems and accept machine-generated output without sufficient verification (Long & Magerko, 2020). Several studies have reported that students often perceive fluent AI-generated translations as accurate, even when semantic inaccuracies are present (Peng et al., 2024). These findings highlight the growing importance of critical evaluation skills within translator education.

Corpus-Based Investigation of Student Translators' Performance

Corpus linguistics provides a valuable methodological framework for investigating translation behavior in technology-mediated environments. Corpus-based approaches allow researchers to analyze large collections of authentic translation data systematically and objectively (McEnery & Hardie, 2012).

The present study employed a learner translation corpus comprising approximately 90,000 words produced by 60 translation students under three experimental conditions: human translation, neural machine translation post-editing, and generative AI post-editing. The corpus enabled quantitative analysis of lexical diversity, error frequency, stylistic variation, and post-editing behavior.

The findings indicate that students working with generative AI achieved higher levels of lexical diversity and stylistic fluency than those performing traditional translation tasks. Similar results have been reported in recent investigations of AI-assisted translation, where large language models demonstrated strong performance in generating natural and varied linguistic structures (Fu & Liu, 2024; Wu et al., 2023).

At the same time, corpus analysis revealed the presence of AI-specific errors, including hallucinations, contextual distortions, and inappropriate terminological substitutions. Although these errors occurred less frequently than traditional grammatical or lexical errors, their potential impact on translation quality was considerably greater due to their deceptive fluency.

Statistical analyses further demonstrated significant relationships between AI literacy indicators and post-editing performance. Critical evaluation skills showed the strongest predictive effect, followed by prompting ability and digital literacy. These findings support previous research emphasizing the importance of evaluative competence in AI-assisted translation environments (Ng et al., 2021; Prieto Ramos, 2024).

Implications for Translator Education

The growing role of generative AI in translation practice has important implications for translator education. Traditional training programs have focused primarily on linguistic proficiency, intercultural communication, and translation strategies. While these competencies remain essential, they are no longer sufficient in AI-mediated environments.

Educational institutions must now prepare future translators to interact critically with AI systems. This requires integrating AI literacy, prompt engineering, ethical awareness, and quality assessment into translation curricula (Kasneci et al., 2023; Biel, 2024). Students should learn not only how to use AI tools effectively but also how to evaluate their outputs critically and responsibly.

Prompt engineering has emerged as a particularly relevant skill. Effective prompts can improve translation quality, terminology consistency, and stylistic appropriateness. Consequently, prompt design may become an integral component of future translator competence frameworks (Algaraady & Mahyoob, 2025).

Furthermore, translator training should emphasize reflective practice and critical thinking to counteract automation bias. Developing students' ability to question, verify, and revise AI-generated content will be essential for maintaining professional standards in increasingly automated translation environments.

Conclusions. The integration of generative AI into translation workflows is reshaping the nature of machine translation post-editing competence. While AI technologies enhance fluency, lexical richness, and productivity, they simultaneously introduce new challenges related to reliability, hallucinations, and automation bias. The findings of this study demonstrate that AI literacy plays a significant role in successful post-editing performance and should therefore be considered a core component of translator competence.

Future translator education must move beyond traditional technology training and incorporate AI literacy, prompt engineering, critical evaluation, and human-AI collaboration into curriculum design. Such an approach will help prepare translators for the evolving demands of the language services industry and ensure that human expertise remains central in AI-assisted translation environments.

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Алізада Л. КОМПЕТЕНТНІСТЬ ПОСТРЕДАКТУВАННЯ МАШИННОГО ПЕРЕКЛАДУ В ЕПОХУ ГЕНЕРАТИВНОГО ШТУЧНОГО ІНТЕЛЕКТУ: КОРПУСНЕ ДОСЛІДЖЕННЯ НАВИКІВ СТУДЕНТІВ-ПЕРЕКЛАДНИКІВ

Основною метою статті є дослідження особливостей взаємодії студентів-перекладачів із перекладами, створеними засобами штучного інтелекту, а також вивчення взаємозв'язку між рівнем ІІ-грамотності та якістю постредагування машинного перекладу. Використовуючи корпусний змішаний дослідницький підхід, автор порівнює результати людського перекладу, постредагування нейронного машинного перекладу та постредагування перекладів, створених

штучним генеративним інтелектом. Отримані результати показують, що генеративний ІІ сприяє підвищенню швидкості перекладу та лексичного розмаїття, однак одночасно породжує специфічні проблеми, включаючи галюцинації та контекстуальні спотворення. Статистичний аналіз свідчить про те, що ІІ-грамотність, навички критичної оцінки та вміння формулювати запити (промпти) істотно впливають на якість постредагування. У статті пропонується модель компетентності післяредагування машинного перекладу, розширена за рахунок інтеграції лінгвістичних, технологічних, оціночних та колаборативних компонентів. Результати дослідження роблять внесок у сучасні дискусії про перекладацьку компетентність та містять практичні рекомендації для підготовки перекладачів в умовах використання технологій штучного інтелекту.

Дослідження ґрунтується на змішаній методології, що поєднує методи корпусної лінгвістики, кількісного статистичного аналізу та якісного тематичного аналізу. Емпіричні дані були зібрані у 60 студентів бакалаврату та магістратури перекладацьких спеціальностей, розділених на три групи: Human Translation (HT), Neural Machine Translation Post-Editing (NMTPE) та Generative AI Post-Editing (GAI-PE). Обсяг сформованого навчального корпусу становив близько 90 000 слів. З використанням корпусних інструментів та статистичних процедур було проаналізовано якість перекладу, частотність помилок, лексичну різноманітність та показники ІІ-грамотності учасників дослідження.

Наукова новизна дослідження полягає у переосмисленні традиційних моделей перекладацької компетентності у контексті генеративного штучного інтелекту. У роботі ІІ-грамотність, навички промпт-інжинірингу, здатність виявляти галюцинації та компетенції у сфері взаємодії людини та штучного інтелекту розглядаються як ключові компоненти компетентності постредагування машинного перекладу. На відміну від більшості попередніх досліджень, зосереджених переважно на якості перекладу та продуктивності праці перекладачів, ця робота аналізує вплив ІІ-компетенцій на ефективність діяльності студентів-перекладачів у середовищі генеративного штучного інтелекту.

Результати дослідження показують, що генеративний штучний інтелект сприяє підвищенню швидкості перекладу та лексичного багатства тексту, одночасно створюючи ризики, пов'язані з фактичними неточностями та галюцинаціями. Рівень ІІ-грамотності виявився значним чинником, що визначає успішність постредагування, що підкреслює зростаючу роль навичок критичної оцінки у підготовці перекладачів. У статті робиться висновок про необхідність інтеграції ІІ-грамотності, промпт-інжинірингу та стратегій критичної оцінки до освітніх програм з підготовки перекладачів для ефективної роботи в технологічно насиченому професійному середовищі.

Ключові слова: постредагування машинного перекладу, штучний генеративний інтелект, ІІ-грамотність, перекладацька компетентність, корпусна лінгвістика, підготовка перекладачів.

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