

# A CRITICAL INTEGRATION OF MACHINE TRANSLATION INTO TRANSLATION TEACHING FOR NON-ENGLISH MAJORS IN CHINA

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**Abstract:** Non-English major students often exhibit uneven language proficiency, with a significant portion demonstrating below-average language skills. This characteristic leads to low motivation when faced with traditional translation tasks, resulting in poor translation quality. By integrating machine translation tools into teaching, it is possible to effectively bridge the gap between learners of varying language proficiency levels, enhancing their confidence and interest in translation. This study develops a set of post-editing guidelines for Chinese-to-English machine translation based on linguistic differences between Chinese and English. The guide is used to instruct students in post-editing tasks, reinforcing their skills in error identification and correction, and specifically training them to construct well-formed English sentences. This approach aims to improve learners' translation abilities and promote personalized autonomous learning.

**Keywords:** Machine translation; Non-English majors; Translation teaching; Post-editing

## 1 INTRODUCTION

China's higher education is entering a new era of digital humanity, where innovative language intelligence tools are being integrated into language study. This evolution has naturally intertwined translation with technology. Driven by the continuous advancements in artificial intelligence, mobile technology, and the internet, both accessibility and quality of machine translation has significantly improved, which promotes machine translation's prevalent use in educational settings. This trend has expanded translation competence beyond linguistic skills to include the ability to produce translated output rapidly and select translations confidently by effectively using machine translation tools. Translation teaching needs to evolve with technological advancements to address the challenges posed by those language intelligence tools. English translation courses for non-English majors, with their broad reach, play a crucial role in enhancing students' abilities to share Chinese stories, communicate professional information, and accelerate scientific innovation. In the era of digital humanities, the integration of new technologies to enhance language skill training and empower learners to improve their translation abilities has become an essential focus in university English translation teaching.

## 2 LITERATURE REVIEW

Research on machine translation in education primarily explores its use in assisting L2 writing and translation teaching, with focus on post-editing strategies developed based on common machine translation errors.

### 2.1 Machine Translation in Writing Instruction

Pre-editing was used creatively in writing classes through writing in the MT system and then editing the source text until the target text is in good condition. Shei [1] explored pre-editing by having students write in English or Chinese using machine translation in different cases, then adjusted their texts based on the Chinese or English output's alignment with their intentions until satisfactory English translations were obtained. Experiment reports and feedback were analyzed, showing that pre-editing enhances learning in cognitive and affective domains and trains students in using MT systems. Most studies, however, focus on post-editing. Niño [2] identified four educational uses of machine translation, emphasizing its role as an error source to enhance grammatical awareness and language skills through error identification and correction. Tsai[3] suggested that machine translation aids intermediate learners by increasing content exchange and improving lexical density and writing quality. Xu [4] found that machine translation enhances vocabulary and grammar learning, writing quality, and confidence in using a second language, fostering autonomous learning.

### 2.2 Machine Translation in Translation Instruction

Translation class activities of post-editing usually involve two core elements: (1) running texts into MT system; (2) identifying and correcting errors in MT raw outputs. Kliffer[5] analyzed translation errors, comparing machine translation, human translation, and post-editing, revealing that machine translation aids in improving text quality and understanding translation's essence. Post-editing allows students understand the challenges machine translation faces,

such as syntactic and lexical ambiguities and cultural nuances. Similarly, studies by Lee & Liao[6] indicate that post-editing improves text quality, language awareness, and confidence, narrowing proficiency gaps, especially when translating from L1 to L2. Yamada[7] examined students' ability to post-edit, finding it requires cognitive effort akin to human translation, and error correction training is essential. As machine translation quality improves, Yamada [8] pointed out that "NMT post-editing may be challenging for language learners".

Both pre-editing and post-editing were incorporated into teaching by Rico et al. [9]. They experimented with integrating pre-editing and post-editing in teaching and proposed pre-editing and post-editing suggestions for educational use. Bowker and Ciro [10] explored pre-editing and post-editing from an academic perspective, proposing a feasible definition and training framework for machine translation literacy. Similarly, Guo and Wang[11] examined the role of pre-editing and post-editing in enhancing text quality through error annotation, exploring human-assisted machine translation teaching. Qiu et al. [12] developed a fine-grained English-Chinese translation error corpus, identifying common error categories such as word choice, omissions, additions, named entities and word order with varying editing work load for different types of errors, providing insights for targeted teaching. Meanwhile, translation technology education is becoming integral to translation curricula, with researchers proposing modules and models for translation technology courses, offering MOOCs like "Computer-Assisted Translation" and "Academic Reading and Machine-Assisted Chinese-English Translation," demonstrating pre-editing and post-editing skills. Hu and Tian [13] advocated for language intelligence courses in MTI programs to enhance skills in machine translation evaluation, pre-editing, and language refinement.

These studies, examining translation error analysis, language acquisition, syntax processing, language linkage, and translation quality, demonstrate that machine translation post-editing helps students improve text quality, better handle syntactic and lexical ambiguities and cultural nuances, enhance language awareness and confidence, and narrow the gap between students of different proficiency levels. While these studies highlight machine translation's benefits in language learning and communication, most focus on translation majors or MTI students, which does not align with the reality that machine translation has expanded from expert literacy to everyday literacy. What's more, existing research at home and abroad rarely studies the application of machine translation in foreign language teaching from the perspective of language proficiency improvement, with some studies only involving the results of a single machine translation application, which hardly helps language proficiency development. To address these issues, this paper proposes an innovative model integrating machine translation into university English translation teaching, tailored to non-English majors' language characteristics and learning goals, exploring new paths for enhancing translation skills.

### **3 DEVELOPING A MACHINE TRANSLATION-INTEGRATED UNIVERSITY ENGLISH TRANSLATION TEACHING MODEL**

#### **3.1 Characteristics of Non-English Major Learners**

College English classes target non-English major students who generally have uneven language ability development. According to the description of China's Standards of English Language Ability (CSE), their language proficiency roughly corresponds to the intermediate level (B1) of Common European Framework of Reference for Languages (CEFR). Their generally below-average proficiency leads to low motivation and unsatisfactory translation output in traditional tasks. Machine translation, now matching or surpassing intermediate learners, can bridge proficiency gaps, boost confidence, and spark interest in translation by assisting teaching.

According to Ma [14], the main language ability shortcomings in Chinese learners' translation ability development are: collocation ability, sentence writing ability, and discourse ability. For non-English majors, with machine translation already excelling in vocabulary selection, focusing on sentence construction training can efficiently improve their bilingual communication ability.

#### **3.2 Post-Editing in University English Translation Teaching**

##### **3.2.1 Chinese-to-English post-editing guidelines**

Post-editing involves the editing, modification, and polishing of machine translation output through error identification and correction, which enhances grammatical awareness and language proficiency. Generally speaking, translation errors are categorized into speech and accuracy errors, with common issues in Chinese-English translation involving polysemy, terminology, pronouns, named entities, particles, quantifiers, omissions, and word order. Given neural machine translation's high quality, students may struggle with error correction, necessitating guidelines to aid in identifying and correcting errors. Currently, publicly available post-editing principles are mainly for commercial purposes, such as the TAUS [15] guidelines. Based on the analysis of Chinese-English machine translation language characteristics, this study proposes the following Chinese-to-English post-editing principles for teaching: (1) converting Chinese linear structures to English hierarchical structures; (2) transforming secondary verbs in multi-verb Chinese sentences to non-predicative forms; (3) converting active to passive voice based on content; (4) converting preposed adverbials to postposed adverbials based on expression; (5) reducing modifiers for plurality and time.

##### **3.2.2 Design of teaching activities**

The instruction scheme includes the following parts: (1) Warm-up Activity. Have students share machine translated sentence to discuss machine translation's strengths and weaknesses. (2) Translation Practice Activity. Students undergo four steps in this process, involving parallel text learning, human translation, post-editing, and reflection, aiming to train

students' language ability and their ability to quickly generate text and make choices among different translations. In this phase, after a 10-minute timed translation exercise, students modify their translations based on provided machine translation texts and continue completing unfinished parts of the human translation in a post-editing manner. The training mainly focuses on sentences with Chinese parataxis structures, often problematic in machine translation, to provide ample error correction practice. Machine translation serves as peer feedback, offering language comparison and improvement suggestions. (3) Discussion. Students discuss machine translation problems with each other, cultivating critical thinking. (4) Reflection. Organize language and cultural insights from translation comparisons, reflecting on human and machine translation issues. See Table 1 for details.

**Table 1** Design of Teaching Activities

Steps	Main Objectives	Key Points
Warm-up	Discuss advantages and potential drawbacks of MT	Share translation of self-selected sentences using MT
Translation	Train language ability, quick text generation, and decision-making	Training through parallel text learning, human translation, post-editing, and human-machine collaboration
Discussion	Train critical thinking skills	Discuss problems in machine-translated texts
Reflection	Reflect on language and cultural knowledge, translation techniques	Summarize language and cultural knowledge points

#### 4 CONCLUSION

Current college English translation teaching overly emphasizes language skills, reducing translation teaching to language instruction, with theory and practice often disconnected, leading to low student engagement. This paper expands traditional translation contents and addresses the use of free online MT in translation teaching for non-English majors in China by positioning machine translation tools as cognitive and motivational aids. In this study, we first reviewed the previous studies on the use of MT in education settings. Inspired by their positive results, we propose a teaching design focusing the procedure of performing PE to integrate MT into translation class for non-English majors in China. By implementing machine translation post-editing activities, developing pedagogical post-editing guidelines, new paths for skill enhancement are explored to innovate non-English major translation teaching by integrating information technology with curricula. The application of technological tools to support translation teaching offers learners novel, convenient support for critical thinking and translation quality improvement, guiding learners to adapt to a language life co-constructed by human and machine.

#### COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

#### FUNDING

This work is supported by Guangdong Provincial Education Science Project (Higher Education Special Project)(2022GXJK143), South China Agricultural University(JG2023103), Guangdong-Hong Kong-Macao Greater Bay Area University Online Open Course Alliance (WGKM2024041), Guangdong Provincial Education Science Project (Higher Education Special Project)(2024GXJK380), Guangdong Higher Education Teaching Research and Reform/Quality Project "On the Reform of AI-empowered College English Blended Teaching from an Ecological Perspective"(YJG2024-9-514).

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