The Journal of Education Insights Vol 4 Issue 2 2026

Original Research Article

Open Access

Application and Reflection of AI-Assisted Translation Tools in Translation Course Teaching

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Abstract: AI tools based on deep learning and neural network architectures exhibit characteristics such as high efficiency, precision, adaptability, and multimodal integration. In the curriculum, these AI tools are applied in scenarios including pre-translation preparation, draft generation, quality assessment, and strategy training, significantly enhancing both efficiency and quality. However, there are risks associated with over-reliance on technology and the potential weakening of core competencies in teaching. To address these challenges, this paper proposes optimization strategies such as balancing technological assistance with skill development, constructing a blended teaching model, enhancing teachers' technological literacy, and refining the curriculum evaluation system, thereby promoting innovation in translation education.

Keywords: AI translation; translation teaching; human-machine collaboration; translation competence; teaching reflection

Introduction

With the rapid advancement of artificial intelligence technology, AI-assisted translation tools have become important auxiliary means in translation education. Their technical principles, based on deep learning and neural network architectures, provide efficient and precise support for translation teaching. However, the introduction of AI tools also brings challenges to the transformation of teaching philosophies, methods, and evaluation systems. This paper aims to explore the practical application of AI-assisted translation tools in translation courses, analyze their advantages and limitations, and propose teaching reflections and optimization strategies, with the goal of providing references for the intelligent transformation of translation education.

1 AI-Assisted Translation Tools and the Theoretical Foundations of Translation Teaching

1.1 Technical Principles and Functional Features of AI Translation Tools

AI translation tools are primarily based on deep learning and neural network architectures, with the Transformer model serving as the mainstream framework. The technical principles involve four key stages: first, tokenization and word embedding convert source language text into vector representations; second, the encoder-decoder structure captures contextual semantics, where the self-attention

mechanism dynamically focuses on critical information to address long-range dependency issues; third, end-to-end training is conducted using large-scale bilingual corpora to optimize translation rules; finally, post-processing with language models refines grammar and style [1]. In terms of functional features, AI tools offer efficiency (supporting real-time translation), accuracy (significantly improved), adaptability (fine-tuning for specialized fields such as law and medicine), and multimodal integration (supporting speech, image, and video translation).

1.2 Translation Competence Model and AI Tool Integration

The translation competency model must be restructured across three dimensions—knowledge, skills, and strategies—to align with AI tools. At the knowledge level, translators need to master AI model principles (such as the attention mechanism), terminology database construction methods, and cross-linguistic cultural differences. At the skills level, they must cultivate human-AI collaboration capabilities, including proofreading AI-generated outputs, comparing results across multiple models (e.g., analyzing differences in academic document translations between DeepL and Gemini), and customizing prompts to adjust translation styles (e.g., lowering the temperature parameter for technical texts to enhance determinism). At the strategic level, it is essential to establish a hybrid workflow of "AI initial translation + human refinement." For instance, in large-scale translation projects, AI Assistant plugins can be integrated via platforms like Trados and GroupShare, where OpenAI models perform pre-translation, followed by human editing to ensure terminology consistency and logical coherence. Additionally, translators should possess "AI trainer" capabilities, optimizing model performance by annotating errors and providing parallel corpora, thereby creating a "usage-feedback-iteration" feedback loop.

1.3 AI and Translation Education from the Perspective of Philosophy of Technology

Philosophy of technology emphasizes the dialectical relationship between "tools and the subject." The reconstruction of AI in translation education manifests at three levels: First, as a "cognitive enhancement tool," AI transcends the limits of human memory and computation—for instance, by integrating over 2,000 specialized domain terms through knowledge graphs to help students rapidly develop interdisciplinary translation competence. Second, AI triggers a "shift in educational objectives," moving from training "text converters" to cultivating "language strategists." This requires students to possess critical thinking (such as identifying cultural mistranslations in AI outputs), ethical judgment (e.g., handling data privacy when dealing with sensitive content), and technical management skills (like model selection and parameter tuning). Finally, AI drives "innovation in teaching paradigms." The philosophy of technology cautions against "technological fetishism," advocating for a "human-centered" approach to ensure AI serves as an "other" that stimulates creativity rather than replacing the human subject.

2 Practical Applications of AI-Assisted Translation Tools in Courses

2.1 Application Scenario 1: Pre-translation Terminology Preparation and Corpus Mining

AI-assisted translation tools utilize natural language processing technology to efficiently complete pre-translation terminology preparation and corpus mining tasks. For example, in medical translation projects, students can use the terminology extraction functions of DeepL or Zhipu AI to automatically identify specialized terms in the source text (such as "coronary atherosclerosis") and match corresponding translations from built-in medical corpora or user-uploaded parallel texts, generating bilingual terminology lists. Simultaneously, AI tools support cross-domain corpus mining; for instance, by analyzing the sentence structures and high-frequency collocations in legal texts, they help students quickly grasp the contextualized translation of terms like "force majeure" and "bona fide acquisition" [2]. Additionally, the semantic network function of these tools can display relationships between terms (such as the co-occurrence relationships between "diabetes" and "complications" or "insulin"), assisting students in constructing domain-specific knowledge graphs. Practice shows that AI-assisted terminology preparation improves efficiency by over 60% compared to traditional methods, while terminology consistency error rates are reduced to below 2%, significantly decreasing post-translation

editing workload.

2.2 Application Scenario 2: Draft Translation Generation and Post-Editing

AI tools can provide multiple reference versions during the initial draft generation phase, such as Google Translate's general model, DeepL's literature-optimized model, and user-customized domain-specific models. By comparing outputs from different models (e.g., variations in translating "shall" in legal texts), students can understand the logic behind translation strategy choices. In the post-editing phase, AI's error detection function can flag grammar errors (such as subject-verb disagreement), terminology conflicts (e.g., inconsistent translations of the same term), and cultural mistranslations (like directly translating "龙" as "dragon," which may cause ambiguity in specific cultural contexts), highlighting them with color coding or annotations. For example, in literary translation, when students work on classical literature, AI can identify potential mistranslations of culture-specific items and suggest consulting authoritative translations or providing cultural annotations, helping students grasp the applicable boundaries of different translation strategies. Research shows that AI-assisted post-editing can increase translation efficiency by 40% while improving translation quality scores from 72 to 85 (on a 100-point scale).

2.3 Application Scenario Three: Translation Quality Evaluation and Feedback

AI tools automate translation quality assessment through machine learning models, covering multiple dimensions such as linguistic accuracy, fluency, and stylistic adaptability. For instance, Trados' QA Checker function can detect basic errors like inconsistent date formats or missing punctuation marks. MEMOQ's Quality Assurance module analyzes sentence complexity and target language reader acceptability, while BERT-based deep learning models evaluate semantic similarity between the source and target texts, generating detailed error reports (e.g., "Terminology error: '区块链' translated as 'block chain' instead of the standard term 'blockchain'"). Additionally, AI enables real-time feedback; for example, the Grammarly plugin instantly corrects grammar errors as students type and provides revision suggestions (such as changing passive voice to active voice to enhance readability). Practice demonstrates a significant positive correlation, with feedback speed being ten times faster than manual evaluation, effectively shortening the learning cycle.

2.4 Application Scenario Four: Translation Strategy and Critical Thinking Training

AI tools can serve as "strategy experimentation platforms" to help students understand the application scenarios of different translation strategies. For instance, when translating news headlines, students can compare the communicative effects of literal translations ("China Launches New Satellite") and free translations ("China's Space Ambitions Soar with New Satellite"), using AI to analyze the emotional tendencies of target-language readers (e.g., higher click-through rates for freely translated headlines). In critical thinking training, the "black box" nature of AI can guide students to reflect on technological limitations, such as analyzing cultural adaptation issues when GPT-4 translates metaphors (e.g., "time is money") or discussing the ethical challenges machine translation poses in handling sensitive content. Additionally, students can enhance their skills through "adversarial training"—for example, intentionally inputting incorrect terminology or ambiguous contexts to observe AI responses and devise improvement strategies [3]. In a course at Beijing Foreign Studies University, students used AI to translate poetry and then compared the reconstruction of imagery in human translations to gain deeper insights into the translation philosophy of "creative treason."

3 Teaching Reflection and Optimization Strategies

3.1 Reflections on the Use of AI Tools

Current AI tools in translation education carry risks of "technological dependency" and "skill degradation." Some students excessively rely on AI-generated drafts while neglecting pre-translation analysis (e.g., text type, target audience) and post-translation strategic adjustments, leading to fragmented translation thinking. Additionally, the "black box" nature of AI may obscure the decision-making process in translation, causing students to focus solely on output results while overlooking the logic of language conversion, thereby weakening critical analysis skills. Meanwhile, insufficient awareness of the tools' limitations (e.g., poor handling of metaphors and puns) leads students to

mistakenly treat AI errors as standard answers. Teaching practices must balance technological assistance with skill development, clarifying that AI serves as an "auxiliary tool" rather than a "replacement." By designing hybrid "AI + human" tasks (e.g., manual text analysis followed by AI verification), educators can guide students to understand technological boundaries and strengthen their translation autonomy.

3.2 Teaching Strategy Optimization Suggestions

Teaching strategies should shift towards a hybrid model of "technology empowerment + competency-based" approach. First, adopt the "task-driven method" by designing tiered tasks: foundational tasks (such as terminology extraction and grammar correction) are handled by AI, while advanced tasks (such as style adaptation and cultural adaptation) are student-led. For instance, when translating advertising texts, students are required to first analyze cultural taboos in the target language, then use AI to generate a draft and refine it. Second, introduce the "comparative learning method" by comparing AI and human translations (such as different versions of *The Analects*) to analyze technological advantages (e.g., efficiency) and human strengths (e.g., cultural interpretation), fostering students' critical thinking. Additionally, incorporate "error analysis sessions" where students deliberately input incorrect instructions (such as ambiguous contexts or wrong terminology), observe AI outputs, and design improvement plans to enhance their technical mastery. For example, in courses at Shanghai International Studies University, students are tasked with correcting "Chinglish" in AI translations and summarizing common error types to create personalized error-correction handbooks.

3.3 Teacher Development Suggestions

Teachers must transition from "knowledge transmitters" to "technology coordinators" and "competency facilitators." First, they need to enhance their technological literacy by mastering the principles of AI tools (such as the attention mechanism and fine-tuning methods) and common error patterns—for example, by participating in "AI + translation" workshops to learn how to debug prompts and optimize outputs. Second, they should develop teaching skills for "human-machine collaboration," such as using AI to generate personalized exercises (adjusting text difficulty based on student proficiency) or analyzing AI logs (e.g., frequency of student usage, types of errors) to identify learning gaps [4]. Additionally, teachers must strengthen their ethical education capabilities, guiding students to reflect on ethical issues in AI translation (such as data privacy and cultural bias). For instance, when translating sensitive texts, they can discuss how to balance technical efficiency with ethical responsibilities. It is recommended that universities offer specialized courses on "ethics in translation technology" and encourage teachers to engage in interdisciplinary research (e.g., collaborating with technical experts to develop translation models for low-resource languages).

3.4 Optimization of Curriculum and Assessment System

The curriculum system should establish a three-tier structure of "foundational-advanced-innovative." The foundational level focuses on the operation of technical tools (e.g., terminology management, post-editing), the advanced level strengthens strategic application (e.g., multimodal translation, cross-cultural adaptation), and the innovative level encourages technological integration (e.g., developing AI-assisted translation plugins). For example, Guangdong University of Foreign Studies offers a "Translation Technology Workshop," where students work in groups to complete full-process projects ranging from corpus construction to AI model fine-tuning. The evaluation system should adopt a comprehensive "process + outcome" assessment approach: process evaluation focuses on the appropriateness of technology use (e.g., whether models are selected based on text type) and the demonstration of critical thinking (e.g., the ability to identify AI errors and propose improvement solutions); outcome evaluation combines human scoring with AI quality assessment (e.g., BLEU scores), with translation quality accounting for 60%, technology usage logs for 20%, and reflection reports for 20%. Additionally, a "dynamic adjustment mechanism" should be introduced to regularly revise course objectives and evaluation criteria in response to technological advancements (e.g., updates in large language models), ensuring that teaching remains aligned with industry needs.

Conclusion

The application of AI-assisted translation tools in

translation courses has not only significantly improved teaching efficiency and quality but also introduced challenges such as technological dependency and the weakening of core competencies. By balancing technological assistance with skill development, adopting blended teaching models, enhancing instructors' technological literacy, and optimizing course evaluation systems, these challenges can be effectively addressed, thereby advancing the intelligent transformation of translation education. In the future, as AI technology continues to evolve, translation education must persistently explore new pathways for human-machine collaboration to cultivate versatile translation professionals equipped with critical thinking and technical management skills.

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