Enhancing MTI Translation Competence in the Era of AI: Based on UNESCO's *AI Competency Framework for Students*

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Artificial intelligence (AI) is undergoing unprecedented changes, significantly impacting the translation industry. In 2024, UNESCO released the *AI Competency Framework for Students*, which establishes a comprehensive dimension based on a two-dimensional content structure, four levels of competencies, and three levels of proficiency, promoting a positive interaction between humans and machines. Students in the Master of Translation and Interpreting Program represent the future talent pool of the translation industry. A key issue for every translator in the current era is how to maintain the subjectivity of the translator amid the AI wave, cultivating new opportunities in times of crisis and leveraging the translator's subjective initiative.

Keywords: cultivation of artificial intelligence competencies in students, human-machine interaction in translation, translation education

Introduction

In September 2024, UNESCO released the *AI Competency Framework for Students*, which incorporates the cultivation of artificial intelligence (AI) competencies into formal curricula based on a "human-centered" principle. This framework aims to guide students toward ethical directions in artificial intelligence research, requiring them to master relevant knowledge, skills, and values. It establishes a comprehensive dimension based on a two-dimensional content structure, four levels of competencies, and three levels of proficiency, creating an environment conducive to student development and fostering positive human-machine interaction.

AI has rapidly emerged and expanded across various industries. The frequent involvement of it presents significant opportunities for the translation industry, while also posing substantial challenges for translators. The rise of AI technology can greatly reduce the time required for translation tasks, enhance the quality and marketability of translated works, expand the scope of translation, create a favorable translation environment, and promote interdisciplinary communication between translation and other fields. However, the emergence of AI technology has also altered the landscape of traditional translation education, leading to issues such as uneven distribution of translation resources and imbalances in the job market (Wang & Zhang, 2024). A key issue for every translator in this era is how to maintain the subjectivity of the translator amid the AI wave, leverage their subjective initiative, establish their artificial intelligence competencies and literacy, enhance human-machine interaction, and create a positive feedback loop in human-machine collaboration while upholding the "human-centered" operational philosophy.

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With the infiltration of AI technology, translations conducted using AI are more efficient and can significantly shorten the time required for manual translation. However, due to AI's lack of human subjectivity, it cannot engage in human-like thinking. Therefore, AI will not completely replace humans. Students in the Master of Translation and Interpreting (MTI) Program are the future talent pool of the translation industry. In light of this trend, it is essential for them to find appropriate methods to enhance their translation competence and skills. They must become proficient in using AI translation tools while fully exercising their subjective initiative to engage in human-like thinking and reflection.

Overview of Key Points From the *AI Competency Framework for Students*

"Human-Centered" Guiding Principles

To begin with, cultivating critical thinking about AI. Students should possess the ability to evaluate the credibility and applicability of AI tools and critically examine their impacts on human agency, social equity, and environmental sustainability from an ethical perspective. They should eliminate excessive reliance on AI and recognize its limitations in addressing all issues, thereby becoming conscious decision-makers regarding AI use. Students must be able to discern when to use or not use AI systems and design AI tools that meet ethical standards. Furthermore, they should be aware of the global state of AI development and contribute to its sustainable advancement.

Secondly, promoting positive human-machine interaction (HMI). The design and application of AI should aim to enhance human capabilities while respecting human dignity and agency. HMI must emphasize transparency and interpretability so that users understand how AI systems operate and the basis for their decisions. This understanding will foster greater trust and effective use of these tools. Additionally, HMI must consider fairness and inclusivity, ensuring that users of diverse abilities, languages, and cultural backgrounds can equally benefit from the conveniences provided by AI. The design of human-machine interactions should prioritize user experience, facilitating seamless interaction through user-friendly interfaces and smooth operational workflows, thereby enhancing efficiency and satisfaction.

Significantly also, enhancing inclusivity in artificial intelligence competency development. The educational system should provide diverse learning resources and curricula to meet the varying needs of students, particularly focusing on educational opportunities for marginalized groups by offering necessary support and resources to enable equal participation in AI learning and applications. Furthermore, the development of AI should consider linguistic and cultural diversity, respecting values and ways of thinking from different cultural backgrounds, fostering dialogue and integration between cultures. Efforts must be made to promote basic internet connectivity and the availability of digital devices, closing the digital divide, and allowing more individuals to access and use AI technologies.

Meanwhile, advocating for environmentally-oriented artificial intelligence development. The development and application of artificial intelligence should fully consider its consumption of natural resources and its impact on the ecological environment. For instance, when designing and training AI models, efforts should be made to minimize energy consumption, adopting low-carbon and environmentally friendly technologies and methodologies. AI should be utilized to address environmental issues, such as climate change and pollution control. By analyzing and processing large volumes of environmental data, AI can help humanity better understand environmental change patterns, predict future trends, and formulate effective responses. Additionally,

research and innovation in the application of AI in environmental fields should be strengthened to develop more technologies and products that benefit environmental protection. Lastly, the educational system should enhance students' awareness of environmental protection, helping them recognize the relationship between AI and environmental stewardship, and encourage their active participation in environmental protection activities.

Last but not least, fostering a "human-centered" perspective on lifelong learning. Lifelong learning is essential for adapting to the rapid development of AI. As AI technologies continuously evolve and advance, individuals must engage in lifelong learning to keep updating their knowledge and skills, keeping pace with the times and avoiding social obsolescence. Through continuous learning, individuals can broaden their horizons, enrich their knowledge structures, and enhance their overall competencies, which are crucial for adapting to the work and life demands of the AI era. Additionally, society should provide a conducive environment and support for lifelong learning, including establishing a comprehensive education system, providing diverse learning resources and platforms, and encouraging businesses and organizations to support employee learning and development (Miao & Shiohira, 2024).

Key Competency Level Requirements

Two-dimensional content structure takes the first place. The first dimension encompasses four interrelated competency areas: human-centered AI thinking, AI ethics, AI technologies and applications, and AI system design. These areas cover the fundamental knowledge and skills that students need to master in the field of AI, emphasizing the importance of understanding and applying AI from an ethical perspective. The second dimension consists of three levels of competency: understanding, application, and creation. The understanding level requires students to grasp basic concepts and principles of AI; the application level demands that students be able to apply their knowledge to solve practical problems; and the creation level encourages students to innovate and develop new applications.

The following are four competency areas. First, the "human-centered AI thinking" area emphasizes that students should develop critical thinking and ethical awareness, understanding the relationship between AI and human needs, social equity, and environmental sustainability. Second, the "AI ethics" area requires students to grasp ethical principles and be able to make responsible decisions in the development and application of AI. Third, the "AI technologies and applications" area focuses on students' understanding and use of AI tools, cultivating their ability to apply theoretical knowledge to practical problems. Finally, the "AI system design" area requires students to possess system design thinking, enabling them to participate in the development and optimization of AI systems.

The final one is three levels of competency. Students' competencies in AI are categorized into three levels: understanding, application, and creation, reflecting the gradual enhancement of proficiency and complexity throughout the learning process. The "understanding" level is foundational, requiring students to comprehend basic concepts, principles, and ethical issues related to AI and to articulate the values and ethical considerations associated with AI tools and their applications. The "application" level necessitates that students apply their knowledge to solve real-world problems, possessing basic AI knowledge and application skills, and be able to flexibly use AI tools in various contexts. The "creation" level represents the highest tier, requiring students to engage in innovative thinking, design, and implement AI solutions to address real-world challenges (Miao & Shiohira, 2024).

Creating New Opportunities Amidst Crisis

Continued Expansion of Translation Technology Necessitates Improvement in MTI Curriculum

First of all, integrating critical thinking and ethical education to strengthen the translation technology curriculum. Wang and Li (2019) in their study "A Survey on the Use of Translation Technology by Translators in the Age of Artificial Intelligence—Status, Findings and Suggestions" propose that higher education institutions should significantly promote translation technology education to cultivate comprehensive language service professionals equipped with modern translation technology skills. They advocate for the establishment of a diversified technical curriculum to meet the demands of the industry.

To develop critical thinking regarding the application of artificial intelligence in translation among MTI graduate students, it is essential to explore the ethical issues that may arise from AI translation, such as data privacy, algorithmic bias, and cultural differences. A diversified translation technology curriculum should be gradually established that includes foundational courses such as "Computer-Assisted Translation" and additional in-demand courses like "Game Localization" and "Technical Writing", supplemented by distinctive case studies and practical teaching.

At the same time, enhancing HMI and machine translation post-editing skills. Machine translation and post-editing models are increasingly adopted in streamlined translation projects. As a result, optimizing human-machine interaction translation models has become a focal point for research. Therefore, MTI education should enhance training in relevant competencies to adapt to the development trends of the translation industry in the AI era.

Training MTI graduate students on how to collaborate with AI translation tools in practical translation projects is vital, allowing them to leverage their respective strengths to improve translation efficiency and quality. A dedicated course on machine translation post-editing should be offered, incorporating real translation projects to train students in the efficient and accurate editing and refinement of machine translation outputs. Simultaneously, it is important to strengthen the research and instructional focus on optimizing human-machine interaction translation models.

Lastly, focusing on sustainable development and innovation while integrating interdisciplinary knowledge and skills. Hu (2024) in "Artificial Intelligence and Foreign Language and Literature Discipline" mentions that the development of artificial intelligence technology presents new opportunities for foreign language disciplines. It is suggested that foreign language programs should integrate with AI technology by offering relevant courses that cultivate language professionals with AI literacy to meet the needs of the AI industry.

Preparing MTI graduate students to stay updated on the latest developments in AI translation technology is essential and should encourage them to engage in innovative research and practices. Courses should cover cutting-edge technologies in AI translation, innovative application scenarios, and sustainable development strategies, stimulating students' innovative thinking and fostering their capabilities for innovation and sustainability within the AI translation domain. This will contribute to the advancement and innovative development of the translation industry. Furthermore, collaboration with related fields such as computer science and data science should be encouraged by offering interdisciplinary courses like "Introduction to Natural Language Processing" and "Big Data and Language Services". Students should also be trained to master skills related to translation technology, such as programming and data analysis, to enhance their overall competitiveness in the language service sector during the AI era.

Enhancing Translators' Professional Competence to Achieve Effective HMI

For MTI graduate students, understanding and mastering the three levels of the *AI Competency Framework for Students*—namely "Understanding, Application and Creation—and developing effective collaboration with machines are crucial for enhancing their professional competence.

Strengthening bilingual proficiency from the ground up. Bilingual proficiency is the core competency in translation. The essence of translation lies in the conversion between languages, and bilingual competency is the foundation for achieving this conversion. For MTI graduate students, having a solid bilingual foundation is essential for accurately comprehending source language texts and expressing them precisely in the target language. During the translation process, translators must deeply understand the rhetorical devices, cultural connotations, and emotional nuances of the source language, and be able to replicate these elements in the target language. This necessitates a thorough mastery of bilingual skills.

Strengthening bilingual proficiency from the ground up means focusing on the systematic and in-depth study of language knowledge, including vocabulary, grammar, and pragmatics. Vocabulary is the basic unit of language; MTI graduate students must not only master a significant amount of fundamental vocabulary but also be familiar with specialized terminology, idioms, and culture-specific words. Grammar knowledge aids in understanding sentence structure and logical relations, ensuring the accuracy and fluency of translations. Pragmatic knowledge encompasses the usage rules of language in different contexts, making the translation more aligned with the expression habits of the target language.

Additionally, cultivating cross-cultural communication skills is essential. Language and culture are inseparable; the development of bilingual proficiency involves not only the accumulation of language knowledge but also a deep understanding of both cultural backgrounds. By strengthening bilingual proficiency, MTI graduate students are better equipped to understand linguistic expressions and cognitive patterns within diverse cultural contexts. For instance, when translating texts related to religion, history, or social customs, translators must possess cross-cultural knowledge to avoid misunderstandings and mistranslations. This cross-cultural communication competence is critical for the future employment of MTI graduate students, especially in a globalized context where translation work often entails cross-cultural communication and collaboration.

Cross-cultural communication competence is reflected in sensitivity to cultural differences. Translators need to balance cultural differences with the accuracy of information transfer while avoiding translation errors caused by cultural conflicts. For example, when translating advertisements or promotional materials, translators must consider the audience's reception within the target culture and make appropriate adjustments to achieve the desired communication effect.

Process-oriented development of knowledge and skills. First, it is necessary to meet the diverse demands of translation practice. Translation work involves various types and fields of texts, such as business documents, technical materials, legal documents, and literary works. A process-oriented approach to training allows MTI graduate students to apply their knowledge and skills in a targeted manner according to different translation tasks. For instance, when translating business contracts, it is essential to master specialized knowledge in the legal and business domains, understanding the legal effects of contract terms and their commercial context. Conversely, literary translation requires not only linguistic knowledge but also an appreciation for literature and artistic expression to convey the original text's literary value and emotional depth.

A process-oriented approach to training also emphasizes the learning of translation strategies and techniques. During the translation process, translators must select appropriate strategies based on the characteristics of the text and the translation purpose. For example, one might choose between literal translation or free translation and decide whether to domesticate or foreignize the text. Through systematic study and practice of these strategies and techniques, MTI graduate students can respond more flexibly to various translation challenges and enhance translation quality.

Furthermore, it is crucial to cultivate problem-solving abilities and critical thinking. Translators encounter various issues during the translation process, such as lexical ambiguity, understanding obstacles due to cultural differences, and adjustments in discourse structure. A process-oriented approach emphasizes discovering, analyzing, and solving problems within translation practice. By continuously addressing translation challenges, MTI graduate students can develop keen problem-solving abilities. This training also encourages students to engage in critical thinking about translation works, analyzing their strengths and weaknesses, which contributes to the continual improvement of their translation skills.

Critical thinking is particularly important for the professional development of MTI graduate students. In the translation industry, translators who can independently solve problems and possess critical thinking skills are more likely to stand out. They are better able to learn, advance, and adapt to the ever-changing demands of the translation market and clientele. For example, in the classroom, instructors can encourage students to discuss and analyze classic translation works, guiding them to examine translations from multiple perspectives and fostering their critical thinking abilities.

Embracing technology and establishing lifelong learning as a professional quality. On one hand, it is essential to adapt to the technological transformations within the translation industry. With the rapid advancement of technology, the translation field has undergone significant changes. Computer-Assisted Translation (CAT) tools, Machine Translation (MT), and AI technologies have become indispensable components of translation work. It is imperative for MTI graduate students to embrace these technologies and master relevant tools and skills. For example, CAT tools can help translators enhance their efficiency by facilitating terminology management and the establishment of translation memories. By utilizing these tools, translators can avoid redundant work and ensure consistency in their translations.

In addition to using these tools, MTI graduate students need to be aware of the trends in translation technology development. As the application of AI technology in translation becomes increasingly widespread, translators must understand its principles and limitations to collaborate effectively with it. For instance, knowing where machine translation may make errors and how to effectively edit and proofread machine-generated outputs is crucial. Only by embracing technology can translators maintain competitiveness and adapt to changes in the industry.

On the other hand, it is crucial to actively respond to the demands of knowledge renewal and professional development. The knowledge and skills required in the translation field are continually evolving. New terminology, expressions, and industry standards are continuously emerging. Establishing a lifelong learning mindset enables MTI graduate students to continuously enhance their translation abilities even after graduation. For instance, with the accelerating globalization of the economy, new industry terms and specialized vocabulary are constantly being developed, necessitating that translators engage in ongoing learning to master this new knowledge.

Lifelong learning also entails continually acquiring new knowledge and skills to enhance overall competencies. In addition to translation expertise, students can benefit from interdisciplinary knowledge, such as marketing and project management. Such knowledge can help translators better understand client needs, improve work efficiency, and expand career development opportunities. For example, translators with project management expertise can effectively handle large translation projects, coordinate team members' work, and improve the overall quality of projects.

Conclusion

As artificial intelligence technology evolves from the first generation, which was knowledge-driven, to the second generation, which is data-driven, and now to the current third generation, characterized by a combination of various elements, the integration of AI and translation technology has emerged as a field rich with research value and application potential. Numerous scholars, both domestically and internationally, are conducting in-depth and diverse studies on AI and translation technology from seven critical dimensions: translation technology education, machine translation, post-editing, computer-assisted translation, translation localization, translator information literacy, and the ethics of translation technology (Wang & Liu, 2022), continuously pushing forward developments in this field.

The release of the *AI Competency Framework for Students* provides a clear guide for the education sector, emphasizing that students must adhere to a "human-centered" philosophy in the era of artificial intelligence, cultivate critical thinking, and develop a deep understanding and reasonable application of AI technologies. At the same time, it is crucial to focus on environmentally friendly practices, promote inclusive development of artificial intelligence, and establish a lifelong learning mindset to adapt to the rapidly changing technological landscape.

Building on this framework, future empirical research could be further deepened by selecting MTI graduate students who excel in the application of artificial intelligence in translation technology as research samples, allowing for a comprehensive analysis of their learning experiences, practical projects, and output results. By conducting comparative analyses with ordinary students, effective learning strategies and growth paths can be precisely summarized, providing other students with successful experiences and learning templates that help them enhance their translation competencies in the AI era.

Moreover, there should be significant efforts to expand interdisciplinary collaboration by aggregating the expertise of scholars from computer science, data science, linguistics, and other disciplines to jointly develop a series of interdisciplinary integrated courses. For instance, introducing a course titled "Artificial Intelligence and Fundamentals of Linguistics" could enable students to gain a deeper understanding of the practical applications of AI technologies in linguistic research, as well as the critical guiding role of linguistic theory in the development of AI translation technology. Concurrently, a course on "Big Data Analysis and Translation Market Research" could cultivate students' abilities to utilize big data analysis tools to accurately study translation market demands and scientifically predict industry development trends, thereby injecting new vitality and innovative thinking into translation education and practice.

In the context of the rapid development of AI technology, its impact and transformation on the translation industry are profound and all-encompassing, highlighting the significance of key factors such as translation ethics, translator competence, and post-editing. The iterative upgrades of AI language models, exemplified by ChatGPT, have significantly advanced editing and translation processing capabilities, presenting unprecedented challenges

to translation professional education (Liu, 2024). As a new reserve of talent for the translation industry, the MTI program must keep pace with the times and continuously update and optimize its curriculum. While preserving the essence of traditional translation education and consolidating foundational knowledge and practical teaching, it is essential to actively embrace innovation and advance in tandem with the rapidly evolving translation technologies. Only by doing so can we cultivate new opportunities amid the crisis of the AI era, facilitating effective collaboration between translators and artificial intelligence, and jointly promoting the translation industry toward a future of greater efficiency, accuracy, and diversity.

References

Hu, K. B. (2024). Artificial intelligence and foreign language and literature discipline. *Foreign Languages in China, 21*(6), 1+12-16.

Liu, H. P. (2024). The expansion and future of translation education in universities. *Chinese Translation Studies, 1*(2), 169-181.

Miao, F., & Shiohira, K. (2024). *AI competency framework for students*. Paris: UNESCO Publishing.

Wang, H. S., & Li, Z. (2019). A survey on the use of translation technology by translators in the age of artificial intelligence—Status, findings and suggestions. *Technology Enhanced Foreign Language Education, 41*(6), 67-72.

Wang, H. S., & Liu, S. J. (2022). Translation technology research at home and abroad (2000-2021): A literature review. *Technology Enhanced Foreign Language Education, 44*(1), 81-88, 92, 113.

Wang, H. S., & Zhang, H. Y. (2024). Opportunities, challenges, and responses in translation education in the AIGC era. *Beijing Journal of Translators, 2*, 3-18.