

Study on translation teaching in the energy and power sector

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This paper analyzes the current state of translation teaching in the energy and power sector. It proposes an innovative framework based on three models: project-based learning, human-machine collaboration, and localization. The aim is to provide references for teaching methodologies and translation practices in the energy and power sector, thereby enhancing the students' core competitiveness of translation in the era of artificial intelligence.

Keywords: *industry-education integration, energy and power, translation teaching, training model.*

With the ongoing advancement of globalization and increasingly frequent international exchanges, an open and diverse global context has taken shape. Against this backdrop, the deepening promotion of «the Belt and Road Initiative» [2] and the comprehensive implementation of the national Culture Going Global strategy have fostered more profound and extensive communication between different nations and cultures. Translation talents bear significant responsibility and mission in this process, and their role as a bridge for cross-cultural communication has become increasingly prominent. Consequently, the training of translation talents has received unprecedented emphasis. The cultivation of foreign language students in science and engineering universities should fully leverage institutional strengths and characteristics, actively develop scientific and technical translation practice and exploration, update translation teaching content and practice in response to the times, strengthen the whole-process education mechanism of industry-education integration, and enhance students' language application capabilities.

1. Analysis of the Current State of Translation Teaching

Amidst the waves of internationalization and intellectualization, universities, as crucial platforms for cultivating translation talents, often emphasize theoretical instruction in their traditional training models, with insufficient focus on practical application. This has led to a misalignment with the actual needs of the translation industry.

1.1. Relative Disconnect Between Translation Teaching and Market Demand

Due to the rapid development of the new energy and power industry and frequent technological updates, China's technical sector has an increasingly diverse demand for translation talents, including technical documentation translation, international conference interpreting, and marketing material translation. However, the current curriculum for translation majors often focuses on traditional translation skills, lacking in-depth explanation of specific terminology and background knowledge in the new energy and power sector. Furthermore, students lack practical projects involving enterprise collaboration

during their studies, leading to graduates facing skill deficits in actual work and a lack of confidence and capability when confronted with complex translation tasks. Simultaneously, a disconnect exists between current translation talent training and market demands, primarily manifested in: despite a significant market demand for translation talents, there is a mismatch between translation education curricula and market needs, inadequate cultivation of students' practical abilities, weak faculty resources, and insufficient emphasis on the application of translation technology. Moreover, the phenomenon of «prioritizing theory over practice» [1] in translation education persists, making it difficult for graduates to quickly adapt to industry requirements. This disconnect is evident not only in the practical abilities of translation talents but also in their mastery of translation skills.

1.2 Insufficient Emphasis on Translation Practice Related to Energy and Power Specialties

In the field of new energy and power, the importance of translation practice is becoming increasingly prominent. With the acceleration of globalization, translators play a key role in technology dissemination and international cooperation. This requires universities to cultivate students with solid translation capabilities and industry knowledge to meet market demands. However, in the current educational model, translation practice has not received sufficient attention, and there is a lack of translation project practice related to the new energy and power industry. Furthermore, explorations in industry-education integration often remain superficial, and industry needs are not fed back to universities timely, creating a certain distance between curriculum design and actual job requirements. Therefore, enhancing translation practice and deepening industry-education integration have become urgent. The difference between scientific and technical translation in the energy and power sector and general translation lies not only in its requirement for high accuracy but also in its emphasis on specialization. In addition to being scientific, scientific and technical translation has its unique stylistic features, typically characterized by authenticity, conciseness, formulaic structure, and formality. This requires translators to closely follow the market, strengthen translation practice, and understand the current state of the market and related industries, as well as the corresponding translation service requirements. Universities need to conduct teaching and practical training based on the characteristics of scientific and technical translation and the current goal of cultivating interdisciplinary foreign language talents.

1.3. Insufficient Integration of Artificial Intelligence

In the era of new energy and power, the rapid development of artificial intelligence (AI) has brought new opportunities for the training of translation talents, especially in improving translation efficiency and accuracy. However, in the current translation education process, the application of AI remains insufficient and has not been fully integrated into the design and implementation of translation courses. This results in students lacking operation and experience

with advanced technologies during their learning. Moreover, as the industry's demand for intelligent translation tools increases, students' adaptability and competitiveness are constrained. Therefore, strengthening the integration of AI will help improve the quality of translation talent training, enabling them to better address future challenges and opportunities. In the new energy and power industry, translation talents not only need foreign language proficiency but also must be proficient in AI to perform deep processing and refinement of the semi-finished linguistic output from computer-assisted translation. This demand for interdisciplinary talents highlights the importance of combining foreign language skills with professional domain knowledge. The rapid development of the new energy and power industry places greater demands on translation talents. Translation work must not only meet the basic need for language conversion but also involve a deep understanding of specific subject matter, requiring accurate parsing and reconstruction.

2. Innovative Models for Translation Teaching

With the rapid development of renewable energy, the national demand for foreign language talents in the energy and power sector continues to grow. To align with the national energy strategy, serve energy technology innovation and international cooperation, and support the development of new energy and power, it is essential to cultivate comprehensive translation talents who possess both professional knowledge and foreign language skills. This training should emphasize practical components, provide internship opportunities via university-enterprise cooperation, strengthen international perspectives and the application of artificial intelligence, and foster students' understanding and communication skills regarding global energy policies. The talent training program should highlight multi-modal, interdisciplinary collaboration and focus on in-depth cooperation with new energy enterprises and research institutions. By jointly developing courses and internship projects, students' professional skills and translation competencies can be solidified. Through practice-oriented learning, students will not only master industry knowledge and language skills but also enhance their ability to engage in scientific and technical communication within the global environment.

China President Xi Jinping has advocated for deepening industry-education integration and university-enterprise collaboration, a direction highly emphasized by national education and social development departments, underscoring the importance of industry-education integration in higher education. Industry-education integration refers to the comprehensive and deep-seated close collaboration between industry and the education sector. Through this model of in-depth cooperation, educational content and methods can be more effectively aligned with the ever-changing market demands and industry development trends. It integrates rich practical work experience, specific industry needs, and cutting-edge technological advancements into teaching and curriculum design, thereby ensuring that the knowledge and skills students acquire precisely match actual job

requirements. Under the background of industry-education integration, universities incorporate the genuine needs and latest developments of the translation industry into the educational system for training translation talents. This ensures that the cultivated talents not only have solid language skills but also possess up-to-date industry knowledge and rich hands-on experience, enabling them to demonstrate excellent professional competence and adaptability in their future careers.

2.1. Project-Based Learning Model

In the backdrop of the new energy and power era, Project-Based Learning (PBL) offers a new pathway for training translation talents and achieving industry-education integration. This model is driven by real-world energy and power projects, allowing students to hone their professional abilities and teamwork spirit through practical translation tasks. Course design closely revolves around industry demands, incorporating actual cases from energy and power enterprises, research institutions, and government departments. This ensures students are exposed to cutting-edge translation tasks, thereby enhancing their employability. During project implementation, guidance and feedback from industry experts are crucial. Regular review meetings enable students to present their translation outcomes, receive professional evaluations, and make improvements. This process not only elevates translation quality but also cultivates students' capacity for self-reflection and critical thinking.

In traditional translation classrooms, the translation skills students encounter are mostly confined to textbook knowledge, such as addition, omission, and conversion. While these skills are important, they often lack flexibility and are difficult to apply in complex and ever-changing translation situations. Consequently, when faced with new texts or unfamiliar translation problems, students often feel at a loss, unsure how to apply their learned knowledge to solve practical problems. Compared to traditional translation teaching, PBL offers significant advantages. Students are exposed to real, unresolved problems that professional translators encounter in actual work which cannot be addressed through classroom theory alone. In the process of solving these problems, students can not only improve their translation proficiency and problem-addressing abilities but also deepen their understanding of the industry, reducing isolated, impractical learning.

Through group collaboration in PBL, students can enhance their communication skills and strengthen their sense of teamwork. During the collaborative process, students realize that translation does not have a single "correct answer"; rather, multiple possible translations exist, and the most suitable expression can be chosen based on different contexts and needs. Simultaneously, within this teaching model, students learn how to fully utilize various resources, including human resources and hardware facilities. In translation practice, students can employ tools like translation software and online dictionaries, and they can also exchange ideas with classmates, instructors, and even industry

experts to gather more information and suggestions. Furthermore, students' bilingual translation abilities improve significantly, enabling them to use both languages more proficiently for expression and conversion.

2.2. Human-Machine Collaboration-Based Training Model

Under the background of industry-education integration, the training of energy and power translation talents should emphasize the application and practice of translation technology. With the continuous innovation of technology, tools like Computer-Assisted Translation (CAT) and Machine Translation (MT) are widely used in the language services industry, raising concerns about whether machine translation will replace human translators. However, from the perspective of the translation technology application process, while language intelligence may impact human translation, it also presents opportunities for refining translation talent training. Today, as artificial intelligence, neural networks, and deep learning technologies continue to converge, translation technology has evolved to include neural machine translation based on cloud technology and big data, showing trends towards practicality, multimodality, and multilingual support. Language service professionals need to comprehensively employ various skills during the translation process. AI-powered translation frequently appears in settings like international conferences, with its capabilities constantly updated and research in the field increasing.

With the vigorous development of sustainable energy and power, leveraging computer-assisted translation technologies, such as Neural Machine Translation (NMT) [5] which is a machine translation technology based on deep learning, has significantly improved translation accuracy and fluency. This also signifies the gradual intellectualization of translation tools and platforms, which support the automatic identification and processing of translation projects to enhance efficiency and quality. Beyond mastering foundational translation theory, translation talents should also be adept at utilizing various computer-assisted translation technologies to improve the precision and efficiency of their work. Technological advancements have brought innovation to the translation field. Translation technology takes natural language used for human communication as its object, employs computers for its analysis, processing, and interactive communication, conducts quantitative research on linguistic information with computer support, and provides language modalities usable by both humans and machines. The core concept of human-machine collaborative translation talent training is the use of technology as a tool to assist translation instruction. We should fully utilize various translation technologies to enhance students' translation competence and practical proficiency.

2.3. Localization Technology-Based Training Model

With the growing global demand for renewable energy, the application of localization translation technology in the new energy and power industry is rapidly developing. Particularly in the international cooperation and exchange within energy and power, the training of translation talents becomes especially

important. Localization refers to «the process of adapting digital content and products developed for one regional market (defined by geography, language, and culture) so they can be sold and used in another. Localization translation is the translation process within product localization and is a key component of localization activities» [4]. Within the context of localization services, the widespread application of information technology and modern project management technology has significantly promoted the procedural, automated, and scaled development of language services, marking important progress in language service technology. Given the strong demand for software technology and applications in localization translation, the training of translation talents should keep pace with industry frontiers. It should be grounded in robust language proficiency, supported by rich industry knowledge, and guaranteed by strong technical capabilities, thereby contributing to the development of new energy and power.

Localization practice indicates that the deep integration of language technology and information technology, coupled with the close combination of process management and project management, has become the core driving force behind the development of the language services industry. This highly integrated model not only represents the forefront of the language services field but is also a crucial support for the smooth execution of localization work. Without the support of information technology and translation technology, localization efforts would face significant difficulties. Therefore, translators involved in localization must possess solid technical literacy to effectively address various technical challenges. This requires translators to have some experience with tools like machine translation and graphic editing software such as Adobe Illustrator, as well as a certain understanding of relevant industries. In current localization practice, language service providers in scientific and technical fields like energy and power must not only master foreign language skills and professional knowledge but also be proficient in localization management processes and possess strong information technology application capabilities. In short, the competency model for a modern scientific and technical translator can be summarized as: $\text{Translator Competence} = \text{Language Proficiency} + \text{Professional Domain Knowledge} + \text{Information Technology Capability}$. This model reflects the comprehensive requirements of the industry for translation talents and highlights the importance of technical literacy in localization translation.

3. Conclusion

The current rapid development of the new energy and power industry has become a significant force driving the global energy transition, simultaneously presenting new requirements for the training of translation talents. As international exchanges in new energy technologies become increasingly frequent, translation professionals must not only possess a solid language foundation but also master specialized knowledge in the new energy and power field and be proficient in applying modern translation technologies. Faced with

this situation, the cultivation of translation talents should be closely integrated with national strategic needs and industry development trends. Guided by the philosophy of «preserving the essence while pursuing innovation» [3] it is essential to strengthen language capabilities while expanding the knowledge boundaries within the new energy and power sector. We should emphasize the integration of translation theory and practice, fostering students' cross-cultural communication skills and technological application abilities, enabling them to meet the demands of international exchange in the new energy and power industry.

Concurrently, with the continuous advancement of translation technology, the training of new energy and power translation talents must evolve with the times, drawing on international advanced experience to promote a shift from traditional translation pedagogy towards cultivating high-level, specialized technical talents. By constructing a diversified teaching system, strengthening university-enterprise collaboration, and achieving deep industry-education integration, we can cultivate high-quality translation talents who are both proficient in new energy and power technology and possess an international perspective. This will not only help enhance the international influence of China's new energy and power industry but also contribute Chinese wisdom to the global energy transition. Under the backdrop of the new era, the training of new energy and power translation talents should be guided by national strategy, supported by technological innovation, and aimed at industry needs. Through optimizing curriculum design, strengthening practical teaching, and deepening industry-education integration, we can cultivate interdisciplinary talents capable of meeting industry demands and adapting to technological changes, thereby providing a solid talent foundation for the international development of China's new energy and power industry.

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Исследование по обучению переводу в энергетической сфере

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В данной статье анализируется текущее состояние преподавания перевода в энергетическом секторе. Предлагается инновационная концепция, основанная на трех моделях: проектное обучение, сотрудничество человека и машины и локализация. Цель состоит в том, чтобы предоставить рекомендации по методикам преподавания и практике перевода в энергетическом секторе, тем самым повысив конкурентоспособность студентов в области перевода в эпоху искусственного интеллекта.

Ключевые слова: интеграция промышленности и образования, энергетика и электроэнергетика, преподавание и обучение переводу.

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Дата поступления рукописи в редакцию: 26.03.2026.

Дата принятия рукописи в печать: 08.05.2026.