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Global Dialogue on Local Knowledge: Exploration of Multimodal Translation Teaching Practice for Yantai Intangible Cultural Heritage (ICH) Empowered by AIGC

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Abstract: The international exchange and communication of Intangible Cultural Heritage (ICH) culture in Yantai, Shandong, China is of great significance for spreading Chinese culture and enhancing cultural confidence. Through the combination of local knowledge of Yantai ICH, multimodal translation and AIGC-empowered teaching, we constructed a six-step model diagram of AIGC-empowered multimodal translation practice and analyzed the application of the model in multimodal translation teaching practice. The research shows that although there are great challenges in translation teaching in the era of AIGC, this model can improve the translation teaching and cultivate students' technical literacy; Current training of translation talents require more abilities, such as translation and proofreading, prompt editing, technical application, and AI collaboration team capabilities. This will be an attempt to integrate ICH into multimodal translation teaching, providing reference for multimodal translation teaching practice.

Keywords: Local knowledge; AIGC empowerment; Yantai ICH; Multimodal translation teaching

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1. Introduction

Globalization and digitization present unprecedented opportunities and challenges for cross-cultural transmission of local knowledge. While digital technologies enable diverse channels for Intangible Cultural Heritage (ICH) dissemination, effectively conveying cultural connotations, emotional resonance, and embodied characteristics through translation remains a critical pedagogical challenge [1]. Since the implementation of *Convention for the Safeguarding of the Intangible Cultural Heritage* by the UNESCO, translation's bridging role has intensified, yet traditional teaching models reveal significant limitations addressing ICH's unique textual properties.

Conventional ICH translation instruction emphasizes linguistic transformation and semantic equivalence, inadequately addressing ICH's multimodal nature, integrating visual, auditory, and kinesthetic dimensions that embody region-specific

cultural memory and values. Yantai ICH exemplifies this complexity: artistic forms of "Jiaodong Steamed Cake" , choreography of "Haiyang Yangko Dance", and spatial compositions of "Yantai Paper Cutting" contain rich nonverbal symbolism inadequately captured through text translation. Traditional pedagogy confines learning to classroom lectures, limiting authentic engagement and cross-cultural competencies.

Recent Artificial Intelligence Generated Content (AIGC) advances offer transformative possibilities [2]. Generative AI enables multimodal content creation including image generation, video editing, audio processing, supporting immersive learning environments. However, current AIGC applications in translation pedagogy concentrate on general or specialized domains, lacking systematic exploration of ICH-specific instruction integrating local knowledge communication with multimodal translation competence development.

This study addresses this gap by constructing a six-step AIGC-empowered multimodal translation model using Yantai ICH, facilitating effective global dialogue of local knowledge through innovative pedagogical practices.

2. Theoretical framework and literature review

2.1. Core concepts

Local knowledge encompasses not only place, time, and class but also the mood, events bearing local characteristics connected to local imagination [3]. In translation, local knowledge transmission faces fundamental challenges, such as cultural-specific items like customs, terminologies and imagery often lack direct target-language equivalents, and risking cultural connotation "dilution" or "distortion".

Multimodal translation transcends traditional language-centered paradigms, treating multimodality in text generation and dissemination as both object and destination [4]. Multimodality denotes comprehensive utilization of multiple symbolic modes to generate meaning [5]. Here, linguistic symbols constitute merely one modality within multimodal networks, while nonverbal symbols such as images, sounds, colors can function as equally vital meaning-making resources with representational, modal, and compositional capacities [6,7].

2.2. Literature review

The first category is on multimodal translation of ICH. The research on cross-cultural communication of ICH is undergoing a paradigm shift from a single text to multimodal integration. Generative AI has the potential in enhancing audience immersion as well as the improvement of communication efficiency though there are difficulties faced in multimodal practice that needs solutions [8,9]. In the practical aspect, multimodal corpus platform for ICH that integrates data storage, VR interaction, and teaching functions can deepen the dissemination effect of ICH and modalities such as text, image, and sound collaborate to construct cultural meaning [10,11]. In the technical aspect, not matter the advantages of multimodal AI translation in promoting ICH, the path of AI-empowered cultural heritage activation, or the multimodal attention modal that provides support for ICH identification, various AI-empowered ways were explored to promote the dissemination of ICH [12–14]. However, these studies mostly focus on macro strategies or specific case studies, and the integration of AIGC systems into local multimodal translation teaching for ICH is still relatively weak. The integration of the technical context of AIGC and multimodal fusion was not fully realized [15].

The second category is on the application of AI in translation teaching. AI is profoundly transforming the paradigm of translation teaching. These studies include the innovative application of LLMs in translation evaluation and corpus analysis, AI translation technology that can significantly improve translation accuracy and teaching efficiency, generative AI that can effectively correct translation errors, enhance cultural understanding ability, and provide immediate feedback, and the value of AI that may limit students' cross-cultural communication skills and creativity development [16–19]. However, there are still shortcomings in current research: lack of multimodal translation of ICH that is integrated into AI translation teaching, insufficient attention paid to the inheritance and dissemination of local knowledge in the context of global dialogue; and little systematic teaching plans for ICH in specific regions.

Therefore, this study deeply integrates the theory of multimodal translation of ICH with AIGC technology to systematically explore the teaching model of multimodal translation of ICH so as to provide a new paradigm for cultivating talents in ICH communication and promote the creative transformation and innovative development of local knowledge.

3. Construction of multimodal translation practice teaching model empowered by AIGC

Since this study aims to promote global dialogue on local knowledge with translation viewed as a dialogue process of cultural equality exchange and understanding, the teaching model positions AIGC technology as a cognitive "scaffold" to assist students in breaking through language and writing limitations through its content generation. The project-based translation of Yantai ICH is transformed into a comprehensive practical task that integrates symbol systems such as text, images, videos, and audios, which can guide students to explore cross-cultural expression strategies of local knowledge in real situations.

With the rapid development of AI technology, although some of the translation steps have incorporated the assistance of AI, the core basic structure of the translation process has not undergone substantial changes, and translators still occupy a central position in the core part of the translation process. Currently, the translation process is gradually shifting towards a model of "human intelligence (HI) and AI symbiosis". The "human-in-the-loop" translation model will be the future trend of translation modes in the future [20]. On this basis, Nida's (2004) four-step translation process was utilized, which are analysis, transformation, recombination, and verification, as the foundation, with the core feature of "human-AI collaboration", and integrate the characteristics of multimodal translation and culture to reconstruct the traditional translation model [21]. A six-step cyclic model was constructed in this study that covers context interpretation, cultural analysis, translation transformation, inspection and verification, translation optimization, and model training (**Figure 1**).

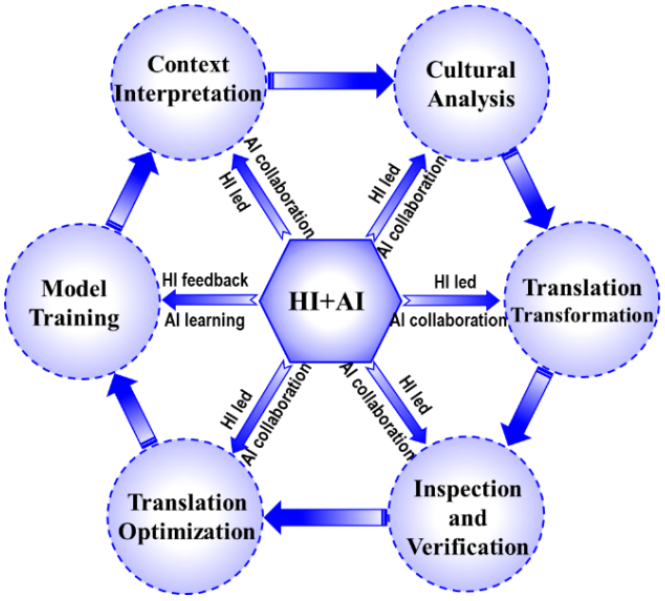

Figure 1. Six-step model diagram of AIGC empowered multimodal translation practice.

In the context interpretation step, the translator with the assistance of AI collaborated gets the explanation on the background information, professional knowledge, contextual imagery of the original text. In the cultural analysis step, the translator requests the AI to analyze and interpret the relevant culture of the original text to analyze the cultural elements that may be involved in the original text, and further prepare for cultural understanding in translation conversion. In the

translation transformation stage, the translator edits prompts based on the context and translation purpose of the original text and AI translates and transforms the original text into multimodal forms such as other languages, images, videos, audio, etc.

In the inspection and verification step, the translator uses AI and the assistance of translation technology to verify whether the multimodal forms of AIGC conform to the original text. In the translation optimization step, the translator edits optimization prompts for AI to reoptimize the previously generated multimodal content until they meet the requirements of the original text and target language. In model training step, the translator continuously optimizes the AI's performance and this ongoing refinement prompts the system to enhance its multimodal output quality. Through iterative feedback, the AI learns and imitates, thereby accumulating knowledge and mastering style transfer in translation.

4. Teaching practice and case analysis

4.1. Overview of teaching practice

Taking the translation project of Yantai ICH in translation teaching as a case, we design a project-based translation teaching framework. There are various forms of Yantai ICH in Yantai such as folk literature, folk music, folk dance, traditional handicrafts, folk art, and folk customs [22]. The translation task requires not only translating the text, but also generating corresponding ICH forms based on the text description. When designing corresponding translation teaching activities, teachers decompose the project into six teaching modules, corresponding to each link of the six-step cycle model. Each module is equipped with one classroom teaching and one after class translation practice activity, and students collaborate in groups of 4–5 to complete the translation project.

4.2. Typical case analysis

In the teaching process teaching, the teacher clarifies the technical tools required for each step, such as professional terminology databases, corpus retrieval tools, etc. In the project analysis stage, the teacher guides students to adopt a six-step translation cycle process, and propose targeted solutions through self-learning the language style of the original text. Students will explore how to translate the original text into multimodal content.

The specific teaching steps are as follows:

(1) Context interpretation

Teacher guides students to use AI to output the background of three Yantai ICH "Haiyang Yangko Dance", "Longkou Handmade Thread Weaving Skills" and "Laizhou Jade Carving". Teacher helps students to edit their own prompts with their background, features, forms, origins, etc. involved. AI output in this step can help the translator and AI understand more about the original text.

(2) Cultural analysis

The teacher guides students to analyze the cultural elements involved in the three Yantai ICHs with the help of AI, so as to help the translator and AI understand the content and interpretation of cultural elements before translation. For example, "Haiyang Yangko Dance" is a dance part of folk community performance, and it is performed at the Spring Festival Temple Fair, etc. These will lay the foundation for the subsequent translation of text.

(3) Translation transformation

The teacher guides students to output different forms of text content through AI in a multimodal format with proper edited prompts according to the features of original texts. It is also very necessary for teachers and students to choose appropriate generative AIs. The more detailed your prompts are, the more prefect the output will be. The outputs of "Longkou Handmade Thread Weaving Skills (Traditional Handicraft)" and "Laizhou Jade Carving (Folk Art)" are as follows (**Figure 2**) [23]. The output video of "Haiyang Yangko Dance" shows as follows (**Figure 3**) [24].

Figure 2. ERNIE Bot 4.5 Turbo generated pictures of Yantai ICH "Longkou Handmade Thread Weaving Skills" (Left) and "Laizhou Jade Carving" (Right).

Figure 3. TianGong AI generated video of "Haiyang Yangko Dance" (Screenshot).

(4) Inspection and verification

In this step, teachers guide students to verify and check the graphics, videos, and other materials generated by AI. Using online terminology databases, official website information, computer-aided translation software, online search tools, and translation search technologies, students verify the output translated text, image credibility, and videos. After verification, guided by the teacher, students summarize the shortcomings of the output to prepare for future improvement and optimization.

(5) Translation optimization

Under the guidance of the teacher, students reorganize the shortcomings of AI output, and further optimize the generation of "Longkou Handmade Thread Weaving Skills" and "Laizhou Jade Carving" images, as well as "Haiyang Yangko Dance" videos, which can enhance students' profound understanding of Yantai ICH, promote the international dissemination of the ICH, and achieve dialogue between Yantai's ICH knowledge and the world.

(6) Model training

In this step, the teacher guides students to feed the text, images, videos, and other content generated in the multimodal translation project and let generative AI learn the original texts of Yantai HCI "Longkou Handmade Thread Weaving Skills", "Laizhou Jade Carving", and "Haiyang Yangko Dance" in Chinese and English as well as the textual descriptions and corresponding generated images, and the textual descriptions and corresponding generated videos. Then, generative AI will be smoother and more optimized when encountering similar multimodal translations in the future.

Throughout the teaching process, teachers guide students to use generative AI and related tools for multimodal translation practice. The characteristics follows in three aspects.

(1) Teachers and students always actively interact with AI, and generative AI always provides feedback, and learns with them;
(2) Generative AI continuously enriches its performance in assisting teachers and students with the output and input;
(3) The multimodal translation project-based teaching empowered by AIGC has opened a new window for translation practice teaching, which not only cultivates teachers AI literacy, but also cultivates students' ability and literacy to apply generative AI for multimodal translation practice.

5. Discussion

5.1. Teaching effectiveness

The Yantai ICH project-based translation practice empowered by AIGC is of great effectiveness. First, in terms of creativity, teachers guide students to explore independently the ways to complete multimodal translation practice with generative AIs. In the project-based practice of Yantai ICH multimodal translation, students edit prompts according to the requirement of translation tasks combined with their own creativity. For example, many characters and different background colors are designed for the "Haiyang Yangko Dance" dance video. That is because this creativity can stimulate students'higher-order thinking and enhance their learning experience [2]. Second, in terms of cross-cultural communication, the multimodal translation form of Yantai ICH empowered by AIGC not only allows target language readers to read the description of original text, but also conveys multimodal content, which allows them to intuitively experience Yantai ICH. This not only promotes cross-cultural communication, but also greatly improves the dissemination of Yantai ICH, further achieving dialogue between local ICH and global culture. Third, in terms of teaching and learning, this type of translation practice like the Yantai ICH multimodal translation practice project not only greatly enriches teaching methods and improves teaching efficiency, but also exercises students'translation and ability in proofreading and generative AI application as well as the cultivation of their translation literacy and AI literacy. More importantly, this type of translation practice can deepen students'understanding of Chinese ICH and enhance their cultural confidence.

5.2. Challenges in multimodal translation teaching

Although generative AI is helpful for the multimodal ICH translation practice empowered by AIGC, there are still disadvantages, such as misunderstanding of meaning, cultural misinterpretation in ICH translation [9]. Challenges in multimodal translation teaching are obvious.

(1) Some translation teachers may be inadequate in translation technology, search ability, technical literacy, and AI literacy. So strong translation practice teaching and search abilities and being proficient in editing prompts to generate AIGC will be the basic requirement for translation teachers.
(2) Some students may not be skilled in the application of generative AI. Multimodal translation ability, the ability to edit prompts, technical literacy, and AI literacy will become daily used in translation study.
(3) The challenges of the requirement for hardware and software in multimodal translation teaching also appears. The classroom used for teaching needs not only multimedia, but also computers connected to the Internet as well as various AI models.
(4) The ethical issues related to AI will be another challenge. It is very necessary for teachers to guide students correctly to generate corresponding multimodal content, but not overly rely on AI models.

5.3. Ability reconstruction

For students who can successfully complete project content and achieve project teaching objectives, AIGC empowered multimodal ICH translation needs to reconstruct students' translation abilities. We suggest that it is necessary to reconstruct the following students' abilities to meet the teaching objectives: The ability to accept new technologies and AI in translation practice; The ability to review the details of multimodal content generated by generative AI; The ability to

apply various generative AI and edit prompts properly; and teamwork ability under AI collaboration. Only by mastering these basic abilities can students smoothly further improve their corresponding literacy, such as political literacy, language literacy, cultural literacy, and audience awareness [15]. Only then can we cultivate the translation talents needed by society in the AIGC era.

6. Conclusion

The multimodal translation practice in the era of AIGC have brought various possibilities to the teaching of translation courses. Based on related studies, this study has integrated local knowledge and multimodal translation. Taking Nida's four-step translation method as the core foundation, we construct a six-step model diagram of AIGC-empowered multimodal translation practice, analyze the basic teaching steps of project-based practice in multimodal translation of Yantai ICH, and summarize the teaching effectiveness, challenges, and translation abilities that students need to reconstruct of this teaching model. There were implications of this study:

(1) It is very necessary to implement translation teaching reform with the advanced AI technology and the latest industry trends combined

(2) Local knowledge such as ICH should be very appropriate part to consider for the reform of translation teaching, which can stimulate students' interest in learning and enable local knowledge to engage in global dialogue

(3) Incorporating traditional Chinese culture can not only promote the international dissemination of local culture, but also enhance students' cultural confidence.

Although there are shortcomings in this study, such as the need for taking empirical research for the six-step multimodal translation practice model, the insufficient details of the model in inaccurate optimization of multiple iterations of generated content, and the lack of detailed discussion on the evaluation of translation course teaching. Further research can refine the course teaching evaluation of the multimodal translation model, optimize the content through multiple iterations, and conduct empirical research prove the multimodal translation teaching model empowered by AIGC, laying the foundation for the cultivation of translation talents in the era of AIGC.

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Disclosure statement

The authors declare no conflict of interest.

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