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Enhancing Students' Chinese Translation Skills through ChatGPT

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Abstract

Chinese has become one of the most popular foreign languages to learn in Thailand, driven by the strengthening ties between China and Thailand in trade, tourism, and education. However, mastering Chinese remains a significant challenge for many Thai students, especially in translation. Unlike speaking, listening, reading, and writing, translation requires a deeper understanding of linguistic structures and cultural nuances. The complexity of Chinese sentence patterns, differences in syntax, and the lack of one-to-one word equivalence between Chinese and Thai make direct translation difficult. The difficulty of Chinese translation and lack of focus on translation skills in conventional language instruction leave students struggling to accurately convey meaning between the two languages, highlighting the need for innovative teaching approaches to solve this gap. This study seeks to examine whether ChatGPT can enhance students' Chinese translation learning achievement and identify its impact on Chinese translation skills. And also, to investigate students' acceptance of learning Chinese translation through ChatGPT and the key factors influencing their acceptance. ChatGPT, an AI-driven language model, offers immediate translation support, contextual clarifications, and grammatical corrections, allowing learners to enhance their translation abilities more efficiently. The participants are 50 Thai junior high school students from a junior high school in Chiang Mai, Thailand. They are evaluated with a Chinese translation skill assessment, pre-test, post-test, and TAM (Technology Acceptance Model) questionnaire to assess their learning achievement and acceptance of ChatGPT after using ChatGPT for Chinese translation learning. The experimental results indicate that using ChatGPT for Chinese translation learning can help students improve their learning achievement and enhance their learning acceptance, making them more willing to integrate ChatGPT into their study process.

Keywords: Artificial intelligence, Generative AI, Chinese translation, learning achievement

Introduction

China and Thailand established diplomatic relations in 1975, fostering strong economic and cultural ties, with China being Thailand's top trading partner and the largest source of tourists (Bingling Zhong, 2022; Royal Thai Embassy, Beijing, 2020). This growing relationship has increased the demand for Thai professionals

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proficient in Chinese translation, highlighting the importance of Chinese language education (Xu WeiJie and Jiang Nannan, 2021). Chinese is the second most popular foreign language in Thailand, supported by government policies integrating translation into curricula (Ministry of Education, 2013; Center for Chinese Language Exchange and Cooperation, Ministry of Education of the People's Republic of China, 2022). However, translation education faces challenges: teachers often lack practical experience, students struggle with real-life applications due to exam-focused instruction, and schools face limitations in instructional time and modern technological support (Kanokporn Numtong and Pan Lei, 2022).

The National Education Act of 1999 in Thailand mandates the use of media and technology to drive educational reform, emphasizing the need for infrastructure to support various forms of communication. The government actively promotes the development of educational materials and technologies, fostering lifelong learning and self-directed knowledge acquisition (Supachai Jeangjai, 2023). In recent years, the emergence of online Chinese teaching platforms, such as Confucius Institute Online, eBLCU, Tang Chinese Education, Slow Chinese Online Learning, Chinlingo Online Learning, and Chinesebon Online Learning, has significantly enhanced access to Chinese education. The continuous advancement of modern distance education, driven by the Internet, provides diverse learning opportunities for students from different backgrounds. This technological progress effectively addresses the shortage of overseas Chinese teachers, particularly in the wake of the pandemic, while creating a flexible and immersive learning environment that integrates virtual and real-world elements. Such developments have made Chinese education more systematic, scientific, objective, and efficient. The expansion of online teaching has further strengthened the global reach of the Chinese language and culture, demonstrating the transformative impact of technology on education (Jiazhen Li and Feihua Wang, 2023).

Now, recent advancements in artificial intelligence offer promising avenues to overcome these educational barriers. Generative AI, particularly ChatGPT which launched in 2022, ChatGPT leverages natural language processing to generate human-like text, enabling applications in translation, content creation, and personalized learning (OpenAI, 2022). Unlike earlier rule-based chatbots, ChatGPT's machine-learning framework supports complex tasks, including code generation and culturally sensitive translations (Kuhail et al., 2023). Studies demonstrate its efficacy in language education: it provides instant feedback, fosters engagement through interactive dialogues, and allows self-paced learning (Kohnke et al., 2023). For translation pedagogy, ChatGPT can generate context-specific exercises, simulate real-world scenarios, and refine students' cross-cultural sensitivity (Yu Yuxiu, 2024). Its integration aligns with the Chinese Proficiency Grading Standards' emphasis on "accurate and flexible" translation outputs.

As an artificial intelligence (AI) system built on Natural Language Processing (NLP) technology, ChatGPT has found extensive use in educational environments. However, there are differences in how well-received this new technology is among students, which makes it difficult for it to be widely used. Thus, there is substantial study value in figuring out the main elements affecting students' adoption of ChatGPT. To systematically analyze students' acceptance of ChatGPT, this study adopts the Technology Acceptance Model (TAM) (Davis, 1989) as its theoretical framework. TAM is a classical information systems theory widely used to study users' acceptance and adoption of new

technologies (Venkatesh & Davis, 2000). The model posits that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are the two core factors influencing users' behavioral intentions. Perceived Usefulness refers to the extent to which users believe that using a particular technology can enhance their learning or work efficiency, while Perceived Ease of Use refers to the extent to which users perceive the technology as easy to use, requiring minimal effort to learn (Davis et al., 1989). TAM has been used extensively in the field of educational technology in recent years, especially in research on the adoption of AI-based educational technologies, intelligent tutoring systems, and online learning platforms (Teo, 2011). For example, Huang et al. (2021) looked at the applicability of TAM in intelligent educational tools and discovered that students' willingness to use such technologies was highly influenced by their perceptions of its usefulness and ease of use.

Therefore, this study employs ChatGPT as an instructional tool for teaching Chinese translation. This study aims to evaluate the students' acceptance of using ChatGPT for Chinese translation learning, ensuring that the tool is suitable for them and can support them in improving their translation skills and learning various concepts and content.

■ Research Questions

To ensure the new approach that uses ChatGPT as a tool to promote students' Chinese translation learning achievement and enhance their learning acceptance. Two questions have been defined as follows:

RQ1: Do students accept learning Chinese translation through ChatGPT?

RQ2: Can ChatGPT improve students' Chinese translation learning achievement?

■ Significance and Purposes

- 1) To study the features of ChatGPT that can support Chinese language translation teaching.
- 2) To investigate how students accept the integration of ChatGPT as a tool in their Chinese translation studies.
- 3) To evaluate the impact of ChatGPT on students' Chinese translation skills, both short words and sentences.
- 4) To evaluate the impact of ChatGPT on students' Chinese translation learning achievement.

■ Literature Reviews

This research synthesized data from multiple studies that provide evidence for the effectiveness of technology-supported learning in promoting students' Chinese translation skills and learning achievement.

Current Chinese language teaching and learning

Since establishing diplomatic relations in 1975, China and Thailand have deepened cooperation across trade, tourism, and education, driven by initiatives like the Belt and Road (Bingling Zhong, 2022). China is Thailand's largest trading partner and tourist source, intensifying demand for Thai-Chinese translation skills (Royal Thai Embassy, Beijing, 2020). The Thai government prioritizes Chinese education, with over 1,500 schools offering courses and 863,056 students enrolled by 2013 (Office of the Education Council Secretariat, 2016). Despite policy support, students exhibit limited proficiency in translation due to inadequate teaching methods, insufficient practice, and curriculum constraints (Luo Menglan and Jiraporn Chano, 2018; Bingling Zhong, 2565). Teachers often lack translation experience, while students struggle with real-world applications (Kanokporn Numtong and Pan Lei, 2022). Traditional instruction emphasizes memorization over practical skills, compounded by limited technological integration. The 2021 Chinese Proficiency Grading Standards introduced translation as a core skill, demanding culturally sensitive, accurate output (Li Xiaodong & Xin Yanjun, 2024). This aligns with calls for AI-driven solutions like ChatGPT, which offers real-time translation support and interactive learning (Qian Mingqi, 2022; Yu Yuxiu, 2024).

Studies highlight ChatGPT's potential in language education, enabling personalized feedback and task-specific content generation (Hubbard, 2022; Huang et al., 2022). Its application in translation pedagogy could address gaps in Thai classrooms by enhancing practice opportunities and reducing reliance on exam-centric methods (Kuhail et al., 2023). In summary, while Chinese language education in Thailand is experiencing rapid growth—especially at the higher education level—its sustainable development is hampered by inadequate teaching resources and the misalignment of instructional methods with student needs. Addressing these issues requires a comprehensive approach: enhancing teacher training, increasing resource investment, and integrating modern technology and online platforms into classroom instruction. Scientific classroom design and diversified teaching strategies are essential to elevate student engagement and improve learning achievement, ensuring the future sustainability of Chinese language education in Thailand.

Translate Chinese language learning

In recent years, Chinese has become a key language in international communication, and its study is growing rapidly. The Chinese Proficiency Grading Standards for International Chinese Language Education, released in March 2021, mark a milestone by defining translation as one of the five core skills—alongside listening, speaking, reading, and writing—with specific proficiency levels (LiDong Han, 2022). According to Panya Borisut (1990), translation involves accurately conveying meaning from one language to another.

Translation courses are now central to Chinese language programs in Thai universities and serve as a comprehensive test of language proficiency, preparing students for professional endeavors (LiZhu Fu, 2014). For international students, the main challenge is understanding Chinese; thus, initial instruction emphasizes translating from Chinese to a foreign language to build comprehension, later shifting to translating from a foreign language to Chinese to improve expression (MingQi Qian, 2022). However, issues such as limited course offerings, unclear objectives, and

inconsistent planning hinder the effectiveness of translation teaching (LiZhu Fu, 2014). Scholars advocate for clearly defined translation courses that use textbooks adapted to different proficiency levels, divided into beginner, intermediate, and advanced stages. This approach, which emphasizes vocabulary, sentence structure, and cultural nuances, aims to mitigate negative transfer effects and enhance overall communication skills (Gulinisha Jamal and JianHong Li, 2015).

In the field of translation pedagogy, learning achievement is typically defined as the improvement in students' language proficiency, skills, and cognitive abilities acquired during translation training (Gile, 2009). Studies have shown that translation learning achievement can be measured through various methods, such as standardized exams, translation assignment evaluations, student self-assessments, and teacher assessments (Zhong, 2013). In the context of Chinese translation teaching, research has found that lexical usage, syntactic structure, textual coherence, and accuracy are key factors influencing students' translation performance (Károly, 2012). Translation skills is a core factor affecting translation quality, and different scholars have proposed various models of its components. For instance, the PACTE group (2003) identified translation competence as comprising multiple sub-competencies, including linguistic competence, textual competence, research competence, and strategic competence. In Chinese translation studies, researchers place greater emphasis on the development of lexical knowledge, grammatical accuracy, translation strategies, and cross-cultural adaptation skills (Muñoz Martín, 2014).

- **Vocabulary:** Vocabulary is the foundation of translation. Studies have shown that students' vocabulary size and accurate understanding of word meanings directly affect their translation quality. Furthermore, collocational competence is also considered a key factor in high-quality translation (Károly, 2012).

- **Grammar:** Grammatical competence directly influences the fluency and readability of the translated text (Newmark, 1988). Research has found that training in syntactic structures can significantly improve students' translation accuracy (Muñoz Martín, 2014).

- **Accuracy:** Translation accuracy is an important criterion for assessing translation quality, primarily referring to the completeness and faithfulness of information transfer. In Chinese translation teaching, some studies suggest combining peer assessment and computer-assisted evaluation to enhance the objectivity and effectiveness of assessment (House, 2015).

The measurement of Chinese translation learning achievement involves multiple dimensions, including accuracy, fluency, logic, and cultural adaptability. Translation skills cover key abilities such as vocabulary, grammar, and translation strategies. Existing assessment methods include traditional manual scoring as well as modern computer-assisted evaluation technologies. However, with the rapid development of AI technology, future research needs to further explore how to effectively integrate AI tools to optimize translation teaching outcomes and improve the objectivity and operability of assessments.

Improving learning efficiency using technology

Traditional teacher-centered models have gradually given way to modern, technology-enhanced, student-centered approaches in Chinese language teaching. In Thailand, the National Education Act of 1999

mandates the integration of media and technology into education, which has fostered the development of online platforms and diversified learning communities (Supachai Jeangjai, 2023). Recent years have witnessed the emergence of numerous online Chinese teaching platforms—such as Confucius Institute Online and Tang Chinese Education—that combine virtual and real-world elements to disseminate language and culture more efficiently (Jiazhen Li and Feihua Wang, 2023).

The integration of multimedia and information technology in curriculum design has enhanced the depth and breadth of Chinese language instruction. This development not only enriches the learning experience but also supports more systematic and scientific teaching practices (Thanapongpichat Apisara et al., 2023). Additionally, the incorporation of gamification strategies—using elements like leaderboards and rewards—has been shown to boost student motivation, enhance vocabulary acquisition, and improve pronunciation skills in online settings (Jidapa Amarangkul and Natthana Koeyesomboon, 2022). Furthermore, innovative tools such as ChatGPT are increasingly playing a significant role in modern education. ChatGPT facilitates dynamic, interactive learning by providing instant feedback and expert-like responses to both factual and open-ended inquiries, thereby narrowing the gap between current and desired proficiency levels and promoting greater student engagement (Abderahman Rejeb et al., 2024). Collectively, these advancements underscore the transformative impact of technology and innovative teaching methods on the evolution of Chinese language education.

Using ChatGPT for learning objectives

Artificial intelligence (AI) aims to create machines capable of human-like tasks, incorporating machine learning (ML), deep learning (DL), and natural language processing (NLP). ChatGPT, built with deep neural networks and transformer architectures, exemplifies advanced NLP by generating coherent, human-like text from large corpora (Risang Baskara and Mukarto, 2023).

Since its November 2022 launch, ChatGPT has attracted global attention for its natural language generation capabilities, with studies examining its benefits and challenges (British Council, 2023). Various versions - ChatGPT-3, ChatGPT-3.5, ChatGPT-4, and the latest ChatGPT-4o offer a range of features and improvements (Alawida et al., 2023). Released on May 13, 2024, ChatGPT-4o demonstrates enhanced processing of text, audio, and video inputs, with improved voice recognition and faster, more contextually relevant responses (Samarnh Pang et al., 2024; OpenAI, 2024). These features are particularly beneficial for language learning, as the tool accurately analyzes grammar, vocabulary, and context while providing real-time feedback (Preiksaitis and Rose, 2023; Julio Young and Makoto Shishido, 2023).

In education, ChatGPT offers interactive, personalized support that enhances language acquisition. Its ability to generate human-like translations and provide immediate error correction makes it a powerful aid for teaching and learning, facilitating both teacher-led and self-directed approaches (Mohammad Hosseini and Catherine A. Gao, 2023; Wagdi Rashad Ali Bin-Hady and Abdu Al-Kadi, 2023). Moreover, ChatGPT enables the creation of tailored teaching materials and supports discussion and feedback outside traditional classroom settings (Jing L., et al., 2023). Overall, ChatGPT-4o's advanced language processing and real-time,

customizable feedback offer significant advantages in language learning, word and sentence translation, and educational applications.

Technology Acceptance Model

The Technology Acceptance Model (TAM) has been widely applied to investigate users' adoption of various information technologies—ranging from online gaming and learning to shopping and travel information (Chanisara Kanchanatkul, 2018). Initially proposed by Davis (1989), TAM posits that perceived usefulness (PU) and perceived ease of use (PEOU) are critical determinants of technology adoption, as they reflect users' expectations regarding performance enhancement and ease of operation (Grani and Marangunic, 2019). Research indicates that external factors, such as stress—which can impair cognitive processing and increase distractibility—may negatively influence these perceptions (Phillips-Wren and Adya, 2020). Conversely, a positive view of technology's value significantly enhances adoption, with favorable attitudes toward systems like ChatGPT linked to improved assignment performance (Dwivedi et al., 2023). Accordingly, the perceived utility of ChatGPT is expected to positively impact its acceptance for Chinese translation learning. The TAM framework comprises external variables, PU, PEOU, attitude toward using (ATU), behavioral intention to use (BI), and actual system use.

- External Variables: Factors such as user/system characteristics, training, and support influencing PU and PEOU.
- Perceived Usefulness (PU): The extent to which a person believes using a system improves task outcomes.
- Perceived Ease of Use (PEOU): The degree to which a person believes using the system requires minimal effort.
- Attitude Toward Using (ATU): The overall affective response to the system, shaped by PU and PEOU.
- Behavioral Intention to Use (BI): The likelihood of system usage, influenced by ATU and PU.
- Actual System Use: The real-world application of the technology.

In summary, integrating technology and AI into education transforms language learning and translation pedagogy. Tools like ChatGPT offer real-time, personalized feedback and context-sensitive translations, effectively bridging the gap between theory and practice while addressing challenges in Thai Chinese language education, such as limited translation practice and culturally insensitive outputs. Within the TAM framework, ChatGPT's perceived usefulness and ease of use drive its adoption, empowering students to improve translation accuracy and cultural adaptability. As AI evolves, it is poised to enhance linguistic competence, cross-cultural communication, and alignment with global standards like the Chinese Proficiency Grading Standards. Ultimately, ChatGPT provides scalable, student-centered solutions that support Thailand's strategic goals for fostering China-Thai collaboration.

■ Methods

This study explores the impact of ChatGPT on Thai students' Chinese translation skills and learning achievement. By comparing students' learning acceptance before and after using ChatGPT, the study provides an in-depth analysis of how this technology enhances learning achievement. The following sections will detail the experimental process.

Participants

This study was conducted on 50 Thai grade 3 junior high school students aged 14-16 from a junior high school in Chiang Mai, Thailand, with a purposive sampling method. To ensure homogeneity, students with similar knowledge levels were selected. This helps control variables like prior language exposure, educational background, and cognitive development, making the results more reliable. The age range of 14-16 is crucial as it represents a key period in language learning. Students at this stage adapt well to new languages and learning methods, providing valuable data on ChatGPT's effectiveness in Chinese translation learning. Table 1 displays the participants' overall details, encompassing their gender and age.

Table 1.

Participant's general detail

Name	Option	Frequency	Percentage (%)
Gender	Male	29	58.00
	Female	21	42.00
Age	14 years	11	20.45
	15 years	25	49.80
	16 years	14	29.75

Instruments and Data Collection

The purpose of this study is to evaluate students' learning achievement in Chinese translation through the use of ChatGPT and to determine whether their acceptance of ChatGPT has changed. Three experimental tools were developed to assess learning achievement, acceptance of learning, and translation skills among students with beginner-level Chinese proficiency.

The achievement test for Chinese translation learning includes a pre-test and a post-test, with all questions adapted from the HSK Level 2 standard exercise book and adjusted to align with the content of Lesson 5. The tests aim to assess students' translation skills before and after learning, allowing for an evaluation of teaching effectiveness. Both tests consist of 16 multiple-choice questions, including vocabulary and sentence translation sections, with difficulty gradually increasing from easy to hard. The total score for the test is 16 points. This design ensures that the test maintains a balanced difficulty level suitable for beginners, helping them build confidence and

foundational knowledge in Chinese translation. The pre-test and post-test were verified by lecturers who have experience in Chinese teaching with the reliability with KR-20 value 0.75 and 0.73, respectively.

The questionnaire is designed based on the Technology Acceptance Model (TAM) to evaluate the acceptance of ChatGPT-4o (freely accessible vision-capable version) in Chinese translation learning which apply from Thongkoo et al. (2019). It consists of a pre-questionnaire and a post-questionnaire, both containing two identical sections. The first section collects demographic information such as age, gender, and Chinese proficiency level. The second section assesses user acceptance across four dimensions: perceived usefulness, perceived ease of use, attitude toward using, and intention to use. Each dimension includes four questions rated on a 5-point Likert scale (1 meaning strongly disagree, 2 meaning disagree, 3 meaning neutral, 4 meaning agree, and 5 meaning strongly agree). This design helps analyze how these factors influence students' attitudes and intentions toward using ChatGPT for translation learning.

The scoring rubric for Chinese translation assesses students' skills based on vocabulary usage, grammatical accuracy, translation accuracy, and comprehension of the source text. Adapted from Goff-Kfoury's Rubric (2005), it includes three key criteria: Vocabulary, Grammar, and Accuracy. Vocabulary evaluates the correctness, appropriateness, and accuracy of word choice at the HSK4 level. Grammar assesses the proper use of grammatical structures in translation. Accuracy measures how well the Chinese translation conveys the meaning of the original Thai text. Each skill is scored from 0 to 3, where 0 indicates a lack of skill, 1 signifies low proficiency requiring further practice, 2 reflects intermediate ability with room for improvement, and 3 represents high proficiency in handling translation tasks effectively. Table 2 shows the scoring rubric criteria.

Table 2.

The scoring rubric criteria

Issue	Level 0 (Need to Improve)	Level 1 (Low Skill)	Level 2 (Intermediate Skill)	Level 3 (High Skill)
Vocabulary	Uses incorrect vocabulary Frequent errors in word choice	Uses some correct vocabulary Occasional errors in word choice.	Uses mostly correct vocabulary A few errors in word choice	Uses correct and appropriate vocabulary No significant errors in word choice
Grammar	Frequent grammatical errors Incomplete sentences.	Some grammatical errors Sentences are often incomplete or awkward	Few grammatical errors Mostly complete and correct sentences	Correct grammar throughout Complete and well-formed sentences

Issue	Level 0 (Need to Improve)	Level 1 (Low Skill)	Level 2 (Intermediate Skill)	Level 3 (High Skill)
Accuracy	Translation is often inaccurate	Somewhat accurate translation	Mostly accurate translation	Highly accurate translation
	Meaning is frequently distorted	Meaning occasionally distorted	Minor inaccuracies	Meaning is preserved accurately

Experimental Procedures

To assess the impact of ChatGPT on students' Chinese translation learning achievement and translation skills, the experimental process is divided into five main stages, as shown in Figure 1.

Initially, before the first class, the researcher distributed a survey tool to the target group of Thai students to assess their learning acceptance of using ChatGPT. Subsequently, they complete a pre-test to evaluate their familiarity with the test content and their translation skills, which takes 30 minutes. After the survey, the researcher begins using ChatGPT to teach vocabulary translation content in the first class, which takes 50 minutes. In the second and third classes, the researcher continues using ChatGPT to teach sentence translation content. Since sentence translation is more challenging, it requires two sessions, taking a total of 100 minutes. The fourth class involves classroom games to enliven the atmosphere and review previously learned vocabulary and sentence translation content, which takes 50 minutes. In the fifth class, the researcher guides students in using ChatGPT to create their own vocabulary library from the learned words, laying a foundation for subsequent translation studies, which takes 50 minutes. Afterward, students were required to complete assigned tasks in the classroom, allowing the researchers to assess their translation skill levels using translation skill scoring rubric criteria. After the classes end, the researcher again distributes a survey tool to assess the students' learning acceptance of using ChatGPT and asks them to complete a post-class test to evaluate their translation learning achievement after using ChatGPT, which takes 30 minutes.

Results and Discussion

According to the research questions, this study examines changes in students' learning acceptance of ChatGPT and the differences in their Chinese translation learning achievement before and after using ChatGPT. The experimental results are analyzed as follows.

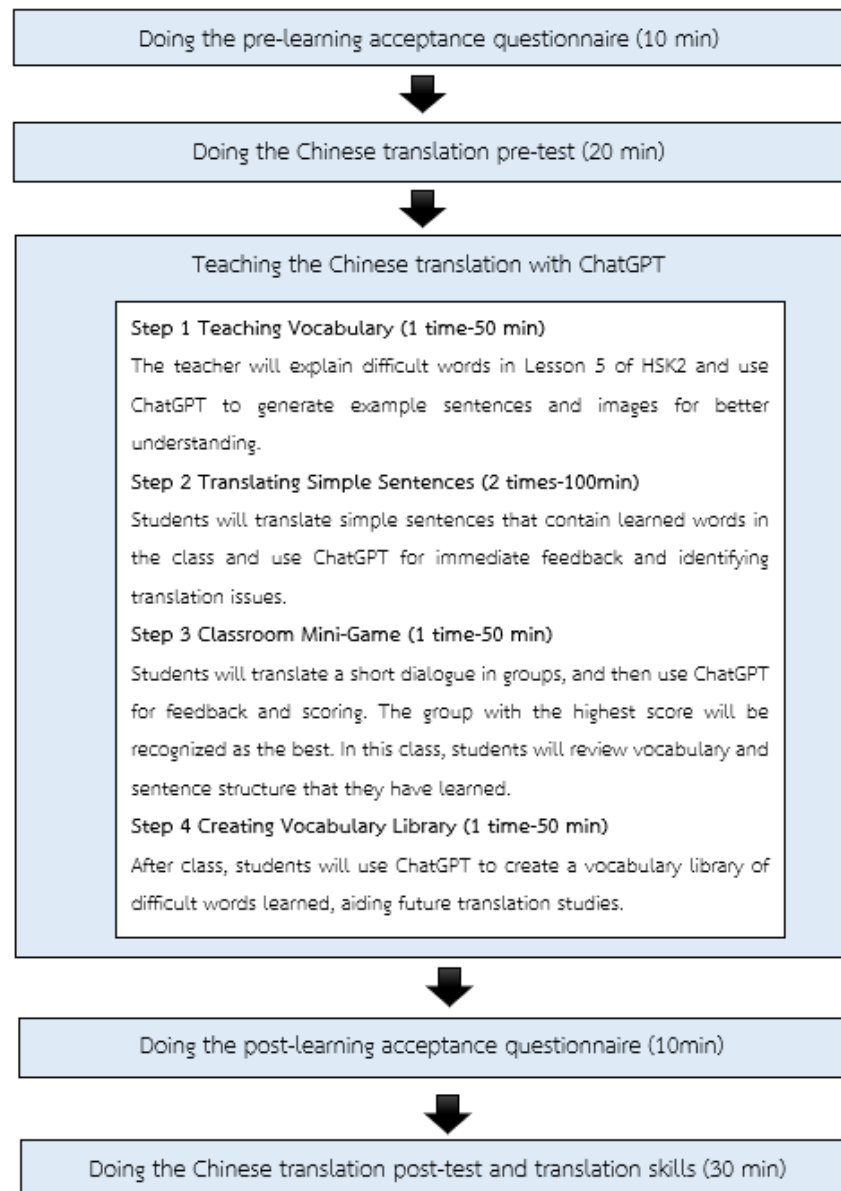


Figure 1. Experimental Procedures

Results of Students' Learning Acceptance

A paired sample t-test was conducted to analyze the score of students' learning acceptance in dimensions of perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using (ATU), and intention to use (BI) before (Pre) and after (Post) the intervention. Table 3 shows that the learning acceptance in the PU, PEOU, ATU, and BI dimensions is statistically significant ($t = 5.650, p = 0.002$; $t = 5.119, p = 0.001$; $t = 8.083, p = 0.005$; $t = 7.834, p = 0.004$, respectively). It indicates that students accept that ChatGPT is useful for learning Chinese translation in four dimensions of PU, PEOU, ATU, and BI. The average post-score of students' learning acceptance in four dimensions of PU, PEOU, ATU, and BI (4.22, 4.21, 4.29, and 4.37) is higher than the pre-score (3.66, 3.69, 3.55, and 3.56).

Table 3.

Results of students' pre- and post-learning acceptance

Dimension	Pre		Post		t	p
	M	SD	M	SD		
Perceived usefulness	3.66	0.745	4.22	0.575	5.650	0.002*
Perceived ease of use	3.69	0.753	4.20	0.524	5.119	0.001*
Attitude toward using	3.54	0.773	4.29	0.469	8.083	0.005*
Intention to use	3.56	0.773	4.37	0.446	7.834	0.004*

* $p < 0.05$

Results of Students' Learning Achievement

A paired sample t-test was conducted to analyze the scores of students' learning tests between the pre-test and post-test. Table 4 shows the students' test scores before (pre) and after (post) the intervention. The result indicates that the mean score is significant with $t = 6.360$ and $p = 0.002$. In addition, Figure 4 shows the average score of students' Chinese translation skills after they learn with ChatGPT. It indicates that students can achieve a higher average score on vocabulary than on grammar and accuracy (1.82, 1.48, and 1.34).

Table 4.

Results of students' learning achievement

Score	Pre		Post		t	p
	M	SD	M	SD		
Test score	10.84	3.571	13.32	2.972	6.360	0.002*

* $p < 0.05$

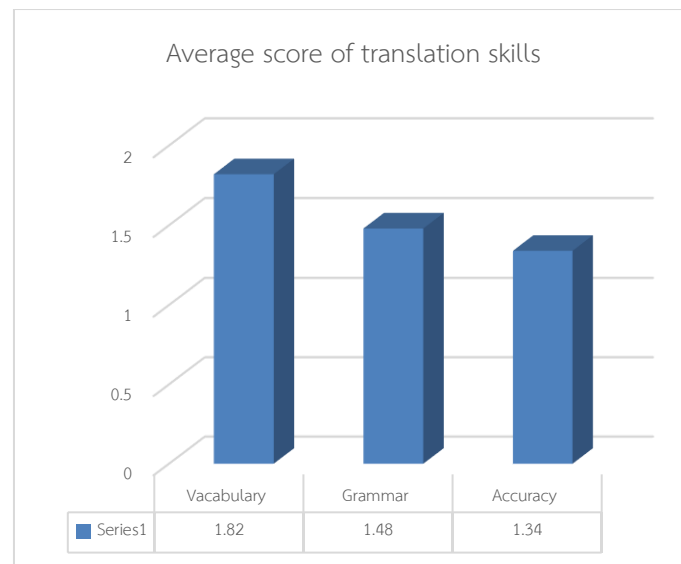


Figure 2. The average score of students' translation skills

Discussion

This study examines the effectiveness of a new learning approach that combines the advantages of ChatGPT to promote the Chinese translation learning achievement of junior high school students. The study aimed to investigate the impact of using ChatGPT on students' learning achievement, translation skills, and acceptance of learning. To address RQ1, the experimental results indicate that the paired sample t-test analysis revealed a significant difference in students' acceptance of using ChatGPT for Chinese translation learning before and after the intervention. Specifically, students' acceptance of ChatGPT showed a significant improvement across four dimensions: perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using (ATU), and intention to use (BI) (see Table 3). These findings suggest that students recognize the value and usability of ChatGPT as a tool for Chinese translation learning, leading to a more positive attitude toward its use and a stronger willingness to integrate it into their learning process. To address RQ2, the experimental results indicate a significant difference in students' learning achievement before and after using ChatGPT for Chinese translation, as revealed by the paired sample t-test analysis. Specifically, students' post-test scores were higher than their pre-test scores, demonstrating a significant improvement in learning effectiveness (see Table 4). This finding suggests that ChatGPT has had a positive impact on students' translation abilities. Furthermore, an analysis of students' performance across different skill areas shows that their scores in vocabulary were higher than those in grammar and accuracy (as shown in Figure 2). This implies that while ChatGPT effectively enhances students' vocabulary acquisition, additional support may be required to improve their grammatical accuracy and overall translation precision.

The experimental results demonstrate that the new learning approach combines the advantages of ChatGPT to promote Chinese translation learning achievement, thereby enhancing students' learning acceptance and translation skills. This is because ChatGPT's instant feedback, vocabulary expansion,

grammatical analysis, and interactive learning experience significantly contributed to students' improved translation abilities. Its novelty effect may have played a role. Studies have shown that students tend to have a high initial interest in new technologies, which helps enhance their learning motivation and engagement. Additionally, the interactivity and user-friendliness of ChatGPT may have increased students' willingness to use it. ChatGPT can engage in natural language interactions with users, provide instant feedback, and create a personalized learning experience. This interactivity is believed to contribute to improving learners' autonomy and learning achievement. (Kalla Dinesh & Nathan Smith, 2023). The experiment also showed that students performed better in vocabulary acquisition than grammar and accuracy, highlighting ChatGPT's strength in enhancing word usage and structuring sentences logically (Jing L., et al., 2023). First of all, it offers immediate feedback, which enables students to improve their comprehension of translation methods and promptly fix mistakes. Second, by letting students engage with it and pick up new words and idioms, ChatGPT improves vocabulary acquisition. Its customized features also facilitate independent learning, allowing students to adjust the content and pace of their education to suit their own requirements. These benefits demonstrate the potential worth of AI technology in education and are consistent with research findings on its use in language instruction. (Minjing Ni, 2023)

Although ChatGPT offers numerous advantages in translation teaching, its application also raises several ethical concerns. First, a crucial concern is academic integrity. Over-reliance on ChatGPT for translation assignments may prevent students from honing their own translation abilities. Second, translation quality and cultural accuracy may be impacted by the inherent biases in AI-generated translations. Furthermore, an over-reliance on AI tools may impair students' capacity for independent study and critical thought. Therefore, it is crucial to develop students' ethical awareness while including ChatGPT in translation instruction. This will help them utilize AI technologies responsibly and strike a balance between individual learning and technical support. (Qingping Pu and Wang Xiang, 2023)

■ Conclusion

According to the research findings, integrating ChatGPT into Chinese translation education offers significant advantages in enhancing students' translation skills. As an AI-driven tool, ChatGPT provides automatic correction, interactive learning, and intelligent translation support, making the learning process more engaging and personalized. Furthermore, ChatGPT effectively bridges the gap between theoretical knowledge and practical application, improving students' linguistic accuracy and cultural adaptability, thereby strengthening their problem-solving abilities in the translation process.

Although the experiment results demonstrate the success of developing a new learning approach for Chinese translation, further research could explore several areas to build upon the findings of this study. First, since the results indicate that students improved more in vocabulary acquisition than in grammar and accuracy, we could investigate how ChatGPT can be optimized to enhance grammatical accuracy and

translation precision. Second, longitudinal studies could examine the long-term impact of using ChatGPT for Chinese translation learning, assessing whether students retain and effectively apply the skills learned.

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■ References

- Abderahman R., Karim R., Andrea A., Horst T., Mohammad I., Exploring the impact of ChatGPT on education: A web mining and machine learning approach. *The International Journal of Management Education*, 22(1), 2024,100932. <https://doi.org/10.1016/j.ijme.2024.100932>.
- Al-khresheh, M.H. (2024). Bridging technology and pedagogy from a global lens: Teachers' perspectives on integrating ChatGPT in English language teaching. *Computers and Education: Artificial Intelligence*, 6, 1-12. <https://doi.org/10.1016/j.caeai.2024.100218>.
- Alawida, M., Mejri, S., Mehmood, A., Chikhaoui, B., & Isaac Abiodun, O. (2023). A Comprehensive Study of ChatGPT: Advancements, Limitations, and Ethical Considerations in Natural Language Processing and Cybersecurity. *Information (Switzerland)*, 14(8), Article 462. <https://doi.org/10.3390/info14080462>
- Almulla, M.A. (2024). Investigating influencing factors of learning satisfaction in AI ChatGPT for research: University students perspective. *Heliyon* 10(11), 1-18. <https://doi.org/10.1016/j.Heliyon.2024.e32220>.
- Amarangkul, J., & Koeyesomboon, N. (2022). Gamification for Designing Learning Activity of Online Chinese Classroom. *Journal of Humanities and Social Sciences for Sustainable Development*, 5(2), 124–137. Retrieved from <https://ssrujournal.com/index.php/hssru/article/view/61>
- Baskara, R., Mukarto. (2023). Exploring the implications of ChatGPT for language learning in higher education. *Indonesian Journal of English Language Teaching and Applied Linguistics* 7(2), 343-358.
- Bingling, Z., (2022). Development of blended teaching to develop basic Chinese language communication skills for junior high school students. *Burapha University*.
- Bo,L., Mengya,C., Mengzhe,Z., Wenfeng,C., Siyu,Z., Shulin,L., (2023). Online Teaching of Chinese as a Foreign Language: Current Situation, Future Trends, and Development Paths. *China Journal of Multimedia & Network Teaching* (04), 25-29.
- Buaraphan, K., Inrit, B., Kochasila, W., (2018). Current policy and practice concerning multigrade teaching in Thailand. *Kasetsart Journal of Social Sciences* 39(3), 496-501. <https://doi.org/10.1016/j.kjss.2018.06.008>.

- Center for Chinese Language Exchange and Cooperation, Ministry of Education of the People's Republic of China. (2022). *Chinese Proficiency Grading Standards for International Chinese Language Education (Thai Edition)*. Thailand: Hongsamutdotcom Company.
- Chanisara K., (2018). A Study of Personal Characteristics, Organizational Environment, and Technological Usages Affecting Acceptance of Technology in the Workplace: Case Study of Employees in the Gasoline Company, Kanchanaburi Province. *Bangkok University*.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982-1003.
- Dwivedi, Y. K., Kshetri, N., Hughes, L., Slade, E. L., Jeyaraj, A., Wright, R. (2023). So what if ChatGPT wrote it? Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, 71, 102642.
- Gile, D. (2009). *Basic concepts and models for interpreter and translator training*. USA: John Benjamins Publishing Company
- Goff-Kfourri, C. A. (2005). Testing and evaluation in the translation classroom. *Translation Journal*, 9(2), 75-99.
- Granic, A., Marangunic, N. (2019). Technology Acceptance Model in Educational Context: A Systematic Literature Review. *British Journal of Educational Technology*, 50, 1-40.
- Gulinisha J., Jian,L., (2015). Translation Course and International Chinese. *Language and Translation Journal (01)*, 90-94.
- Hasan, M.K., Fakh, A.-H., Ibna Seraj, P.M., Hasmirati, (2022). The effect of technology-assisted language program on vocabulary learning among EFL students at the tertiary level. *Heliyon* 8(8), e10313. <https://doi.org/10.1016/j.heliyon.2022.e10313>.
- House, J. (2014). *Translation quality assessment: Past and present*. Routledge.
- Huang, R., Spector, J. M., & Yang, J. (2021). Educational technology: A primer for the 21st century. *Springer*.
- Jade Miller and Otto Khera. (2010). Digital Library Adoption and the Technology Acceptance Model: A Cross-Country Analysis. *The Electronic Journal of Information Systems in Developing Countries*, 40(6), 1-19. DOI: 10.1002/j.1681-4835.2010.tb00288.x.
- Jeangjai, S. (2022). Thailand and the challenge of using educational technology for online Chinese teaching. *Journal of International Studies, Prince of Songkla University*, 12(2), 129-158. retrieved from <https://so03.tci-thaijo.org/index.php/jis/article/view/261508>
- Kalla, D., Smith, N., Samaah, F., Kuraku, S., (2023). Study and analysis of chat GPT and its impact on different fields of study. *International journal of innovative science and research technology* 8(3), 827-833.
- Kanokporn, N., Lei, P., (2022). Research on Teaching Chinese-Thai and Thai-Chinese Translation of Thai Higher Education. *Journal of Sinology and Chinese Language Education* 2(1), 22-31.

- Károly, A. (2012). Translation competence and translation performance: Lexical, syntactic and textual patterns in student translations of a specialized EU genre. *English for Specific Purposes*, 31(1), 36-46.
- Kohnke, L., Moorhouse, B.L., Zou, D., (2023). ChatGPT for Language Teaching and Learning. *RELC Journal* 54(2), 537-550. <https://doi.org/10.1177/00336882231162868>.
- Kuhail, M. A., Al Katheeri, H., Negreiros, J., Seffah, A., & Alfandi, O. (2023). Engaging students with a chatbot-based academic advising system. *International Journal of Human-Computer Interaction*, 39(10), 2115-2141.
- Jing, L., Xiaohui, R., Jiang, X., Chen, C.-H., (2023). Exploring the Use of ChatGPT in Chinese Language Classrooms. *International Journal of Chinese Language Teaching* 4(3), 36-55.
- Jiazhen, L., Feihua, W., (2023). Research on the Advantages and Disadvantages of Online Platform Chinese Teaching. *Advances in Education*, 13(07), 4380-4386. <https://doi.org/10.12677/AE.2023.137689>
- Julio, Y., Makoto S., (2023) Investigating OpenAI's ChatGPT Potentials in Generating Chatbot's Dialogue for English as a Foreign Language Learning. *International Journal of Advanced Computer Science and Applications*, 14(6). <http://dx.doi.org/10.14569/IJACSA.2023.0140607>
- Lidong, H., (2020). The Role of Translation Courses in Chinese Undergraduate Teaching for International Students in China. *Journal of international Chinese language* (03), 37-45.
- Lidong, H., (2022). Strengthen the construction of translation teaching courses for Chinese language majors for international students. *China Higher Education* (06), 38-40.
- Lizhu, F., (2014). The Current Chinese Translation Courses in Thailand, *China Academic Journal Electronic Publishing House*. Beijing, p. 3.
- Lyu, B., Qi, X., (2020). A Review of Research on Technology-Assisted Teaching and Learning of Chinese as a Second or Foreign Language from 2008 to 2018. *Frontiers of Education in China* 15(1), 142-163. <https://doi.org/10.1007/s11516-020-0006-8>.
- Martín, M. (2014). Situating translation expertise: A review with a sketch of a construct. *The development of translation competence: Theories and methodologies from psycholinguistics and cognitive science*, 2-56.
- Menglan, L., Jiraporn, C., (2018) The Development of Communicative Ability and Attitude toward Chinese Language of Secondary School's Students 5 Based on Task-based Language Teaching. *Journal of Educational Measurement Mahasarakham University*, 24(1), 226-242.
- Ministry of Education. (2013). *Chinese Language Indicators and Learning Content According to the 2008 Basic Education Core Curriculum, Foreign Language Learning Area*. Bangkok: Suksasongkroh Publishing, Lat Phrao.
- Minjing N., (2023). The Impact of ChatGPT/AIGC on Learning from the Perspective of Learning Evolution. *Journal of East China Normal University(Educational Sciences)*, 41(7), 151-161.
- Mingqi, Q., (2022). Exploring the integrated teaching of translation —— A study based on the Chinese Proficiency Grading Standards for International Chinese Language Education. *Guangdong University of Foreign Studies, Guangzhou*.

- Office of the Education Council Secretariat. (2016). *Research Report on the Development of Chinese Language Teaching and Learning in Primary Education in Thailand*. Bangkok: Prikwarn Graphic.
- OpenAI. (2022). *Introducing ChatGPT*. <https://openai.com/blog/chatgpt>
- OpenAI. (2024). *Hello GPT-4o*. <https://openai.com/index/hello-gpt-4o/>.
- PACTE Group. (2003). Building a translation competence model. *Triangulating Translation*, 43-66.
- Pang, S.; Nol, E.; Heng, K. ChatGPT-4o for English language teaching and learning: Features, applications, and future prospects. *Cambodian Journal of Educational Research*. 2024,4, 35-56.
- Panya Borisut. (1990). *Theory and Practice of Translation*. Bangkok: The Royal Institute.
- Phillips-Wren G., Adya M. (2020). Decision making under stress: the role of information overload, time pressure, complexity, and uncertainty. *J. Decis. Syst.* 29(Suppl. 1), 213-225.
- Preiksaitis C, Rose C. Opportunities, Challenges, and Future Directions of Generative Artificial Intelligence in Medical Education: Scoping Review. *JMIR Med Educ*. 2023 Oct 20.doi: 10.2196/48785.
- Qingsing P., Wang X., (2023). Opportunities and challenges aroused by ChatGPT as generative AI and strategy for response. *Journal of Chongqing University(Social Science Edition)*, 29(3), 102-114.
- Rejeb, A., Rejeb, K., Appolloni, A., Treiblmaier, H., Iranmanesh, M., (2024). Exploring the impact of ChatGPT on education: A web mining and machine learning approach. *The International Journal of Management Education* 22(1), 100932. <https://doi.org/10.1016/j.ijme.2024.100932>.
- Royal Thai Embassy, Beijing. (2020). *Thailand-China Relations*. Retrieved from <https://thaiembbeij.org/th/republic-of-china/thai-relations-china/>
- Saif, N., Khan, S.U., Shaheen, I., Alotaibi, F.A., Alnfai, M.M., Arif, M., (2024). Chat-GPT; validating Technology Acceptance Model (TAM) in the education sector via ubiquitous learning mechanism. *Comput. Hum. Behav.* 154, 108097. <https://doi.org/10.1016/j.chb.2023.108097>.
- Teo, T. (2011). Factors influencing teachers' intention to use technology: Model development and test. *Computers & Education*, 57(4), 2432-2440.
- Thanapongpichat, A., Buncherd, H., & Thanapongpichat, S. (2023). The Development of a Chinese Vocabulary Learning Activity Package Using Songs to Enhance Learning Efficiency at the Higher Education Level. *Parichart Journal*, 36(3), 82-95.
- Thongkoo, K., Panjaburee, P., & Daungcharone K. (2019). A development of ubiquitous learning support system based on an enhanced inquiry-based learning approach. *International Journal Mobile Learning and Organisation*, 13(2), 129-151.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*, 46(2), 186-204.
- Weijie, X., Nannan, J., (2021). Learning in Thai-Chinese Translation Instruction: A Case Study of Graduate Students in the Thai as a Second Language Communication Program in Huachiew Chalermprakiet University. *Liberal Arts Review* 16(2), 18-29.
- Xiaodong L., Yanjun X., (2024).The Practice and Insights of TCSL Interpretation Teaching Under the Support of ChatGPT.*China Academic Journal Electronic Publishing House*,4(01),234-246

Yuxiu, Y., (2024). Application of translation technology based on AI in translation teaching. *Systems and Soft Computing* 6, 200072. <https://doi.org/10.1016/j.sasc.2024.200072>.

Zhong, W. H. (2013). Memory Training in Interpreting. *Chinese Translation*, 2, 30-33.