ChatGPT Fervor: The Empowerments, and Challenges of EST Translation Teaching with Natural Language Models

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The development and widespread adoption of new technologies like ChatGPT have had a profound impact on education. This paper discusses how ChatGPT empowers the teaching and learning of technical English translation and sheds light on the negative effects and the challenges it brings. Furthermore, it presents strategies for technical English translation teaching assisted by ChatGPT.

Keywords: ChatGPT, EST, translation teaching, empowerments, challenges, strategies

Introduction

In today's era of globalization, the importance of EST (English for science and technology) is becoming increasingly prominent. The rapid development in the field of science and technology and the globalization trend of information exchange have made EST translation ever more important. And with the continuous progress of AI technology, conversational AI technologies such as ChatGPT have had a significant impact on education in today's world. ChatGPT, as an AI assistant based on GPT-4 technology, is equipped with excellent natural language understanding and generation capabilities. As a powerful natural language processing tool, ChatGPT provides new opportunities and challenges for the teaching of EST translation. For English teaching, ChatGPT provides an interactive learning environment. This personalized learning approach can help students better understand and use technical English and improve their translation skills.

In this paper, we discuss how ChatGPT may facilitate the teaching of EST translation, what impacts it may exert on that, and propose a strategy for the EST translation teaching with the assistance of ChatGPT, aiming to study the impact of natural language modeling on it.

ChatGPT Empowering the EST Translation Teaching

The Empowering Features of ChatGPT in EST Translation Teaching

In order to study ChatGPT's assistance in the teaching of EST translation, we need to first understand the important features of ChatGPT so as to better understand how it can empower EST translation teaching, which mainly includes the following points.

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Natural language processing (NLP) technology. NLP technology can be used to perform different tasks including speech recognition, machine translation, text classification and automatic question and answer (Yu & Zhang, 2023). ChatGPT based on NLP technology can help search engines and chat bots to better understand the user's query and thus provide more accurate search results.

Machine learning and deep learning technologies. ChatGPT is trained by machine learning algorithms. It is trained with a large amount of corpus data, and learns the grammar of language, and automatically learns features from the data so that it can understand and mimic human language expressions. This allows it to provide accurate translations and explanations to help students understand terms and concepts in technical English.

Interactive learning. ChatGPT acts as an interactive tool that can engage in real-time dialog with students, providing timely feedback and guidance. This kind of interactive learning helps students actively explore and learn in the process of translating technical English.

Feedback and evaluation. ChatGPT is also characterized with instant feedback and evaluation. This helps students understand their translation skills, identify problems and make improvements. ChatGPT educational auto-grading system can automatically recognize students' assignments and answers and give them the corresponding scores, which can effectively improve the efficiency of the teachers, save their time and improve the quality of teaching.

ChatGPT Empowering the Process of Technical Translation

The teaching of EST translation necessiates massive amount of technical translation practice, and ChatGPT may play a facilitating role in this regard.

Real-time Translation and Batch Processing. ChatGPT can provide real-time translation support and process large number of texts quickly. Users can type in sentences or articles to be translated and make relevant requests, and it will immediately generate corresponding translation results and provide explanations and suggestions.

Fast access to information. During the translation process, users can use ChatGPT to quickly look up and confirm the translation of words and phrases, and identify specific terms and vocabulary in the field of science and technology, so as to improve the speed and accuracy of translation. It is also possible to ask it about relevant technical knowledge or look for literature in specific fields, so as to better understand the translated content.

Improve translation quality. ChatGPT can help identify potential translation errors and give suggestions for corrections, which helps students or translators to correct errors in time. Technical translation usually needs to take contextual information into account to ensure accuracy and coherence of the translation, and translators can use it to solve the problem of unclear or ambiguous context. It can also help to improve sentence structure and expression, thus improving the accuracy of the translation.

ChatGPT Empowering Students of EST Translation

A new era of education with the deep integration of AI and independent learning has arrived (LI, MA, XU, et al., 2023). ChatGPT can be used as a convenient auxiliary tool to help students of EST translation learn by creating relevant content and resources on specific topics through dialogues, forming a benign system of collaborative learning. Specifically speaking, ChatGPT can empower students of English scientific and technical translation in the following ways.

Personalized and diverse learning resources. ChatGPT has powerful knowledge acquisition and information retrieval capabilities. Based on massive data, it can provide students with feedbacks according to their individual needs and learning situations. Meanwhile, ChatGPT can recommend relevant learning resources to students of EST translation, such as translation tools, grammar guides, dictionaries and online translation platforms, helping students improve their English scientific and technological translation skills through diverse data sources.

Learning process autonomy. Through the use of ChatGPT, students will develop the habit of spontaneously and autonomously asking questions and reflecting on the feedback. During this human-computer collaboration process, ChatGPT functions as a practicing partner to provide more language use opportunities for students of EST translation. It can directly interact with students in a variety of ways without teacher involvement, helping students learn better on their own and improving their learning motivation and results.

ChatGPT Empowering Teachers of EST Translation

Reducing teachers' burden. Teachers' work consists of several dimensions, and many national and international studies in recent years have focused on teachers' burden (LI, 2016; WANG & Ningbo, 2018; Ballet & Kelchtermans, 2009; Kim, 2019). Teachers' work includes not only classroom teaching, but also lesson planning, homework correction, participation in school management and administrative work, and the like. As a result, many teachers have problems such as workload and stress. To address this situation, ChatGPT can reduce teachers' burden and give new impetus to teaching by assisting them in designing classroom activities, writing lesson plans and correcting students' assignments.

Promote teaching according to students' abilities. The existence of ChatGPT can promote students' personalized learning to a certain extent. Teachers often face the problem of not being able to meet the individualized learning demands of all students due to limited time and energy, yet with the help of ChatGPT, teachers may be able to more effectively customize their teaching according to the students' aptitude, and at the same time, it can stimulate teachers' potential and improve their teaching ability to a greater extent.

ChatGPT Challenging the EST Translation Teaching

Although the emergence of ChatGPT has added an important chapter to the era of artificial intelligence, and it is beneficial to teachers and students of EST translation in many aspects. But due to the imperfection of ChatGPT and the over-reliance of the users and other problems, it will also have the following negative consequences on EST translation teaching.

ChatGPT Undermining Fairness and Integrity

Headlines such as "Teachers are worried about students cheating," "Students are using ChatGPT to complete papers," "Colleges are banning students from using ChatGPT," etc. have become hot topics of discussion after the release of ChatGPT and many education professionals discussed the issue. The problem stems from the fact that ChatGPT has a low threshold for use but unequal access. When a student completes a certain task using ChatGPT, it will be unfair to the other students who choose to complete the task on their own. At the same time, the instructor's inability to directly identify whether or not ChatGPT was involved in a student's work can also lead to academic integrity issues.

When it comes to teachers, there is in fact the same fairness issue. Teachers can use ChatGPT to automatically grade students' essays through the Automatic Grading System (AES), however, this system is not perfect. AES is mostly sentence-based, focusing on vocabulary and grammar to provide correction and feedback, and suggesting corrections such as grammatical errors and incorrect collocations. However, it does not have a significant guiding effect on the logic and ideological content of the papers (WANG, 2014). At the same time, for students of EST translation, there are many scientific and technical terms in the translation materials, and the AES system is still insufficient in judging the appropriateness and reasonableness of the terms. Therefore, relying entirely on the AES system to grade students' translation may lead to deviation from the original texts, which is unfair and unjust to the students.

ChatGPT Lowering the Critical Thinking Ability

ChatGPT is essentially a generative AI tool that employs natural language processing technique to process texts from pre-trained experience and vast database resources. However, it is far from being able to comprehend complicated contexts and potential implications of mankind, thus sometimes resulting in errors and fabrication of information and citations. For instance, when ghost-writing essays for students, ChatGPT might generate inauthentic references, without paying due attention to academic integrity. Therefore, many regard ChatGPT as unreliable.

Moreover, ChatGPT's prevalence is now playing havoc with both teachers and students in EST education. Some teachers take advantage of ChatGPT to write lesson notes or academic assessments of students, which may lead to a decline in their autonomous thinking as well as the standardization of academic evaluation. While others are overly conservative and resist embracing ChatGPT, whose anti-assimilation attitude towards newly emergence in scientific field is no good. In contrast, students tend to blindly trust the texts generated by ChatGPT, failing to cross-check or verify them. This over-dependence deprives them of the ability to distinguish information. Or worse, the linear way of learning or the deficiency in effective thinking may hinder students' further exploration and education in this field.

ChatGPT Stifling the Creativity

According to Britannica (https://www.britannica.com/topic/creativity), creativity is defined as the ability to originate or produce something novel or innovative. ChatGPT derives all its knowledge from the database constructed by OpenAI for its training, which means that AI tools essentially assimilate whatever data is fed into them, resulting in ChatGPT providing users with an array of selected information combinations conveyed in various forms of expression but with the same meaning. Therefore, ChatGPT cannot be considered creative thus far, with fanaticism towards it resulting in a decline in creativity.

In the past, students had to gather copious amount of information and data to aid them in their assignments. Nowadays, they tend to rely heavily on ChatGPT for assistance and are willing to accept the limited solutions it offers, which will dramatically stunt their learning potential for other possibilities, knowledge, and inspirations. This negative trend and over-reliance on learning-aid tools can lead to irreversible inertia in both thinking and behaviour of students, thereby impacting their future academic career.

When it comes to educators, they ought to stay attuned to all new academic advancements. However, if they resort to utilizing ChatGPT to skimp on their teaching duties, they'll be trapped in the snare of information

cocoons that furnish them with partial and prejudiced knowledge. Taking shortcuts in teaching will ultimately lead to a depletion in their creativity in devising fresh pedagogical approaches or achieving professional milestones.

ChatGPT-aided EST Translation Teaching Strategies

Cast off Hostility towards Artificial Intelligence and Foster Human-machine Collaborative Teaching

Many educators express skepticism about the increasing number of AI tools such as ChatGPT and they may harbor antagonism towards it, refusing to incorporate it into instructions. Nevertheless, the trend towards human-machine collaborative teaching is unstoppable, and it doesn't equal to the complete replacement of teachers. Rather, in the context of human-machine collaboration, machines can handle repetitive, monotonous, and routine tasks, while teachers can focus on more creative, emotional, and inspirational tasks. AI tools can serve as teaching assistants responsible for tasks that are time-consuming or require precise calculations, while human teachers can concentrate on developing students' soft skills, such as intercultural communication, innovative thinking, and self-learning abilities. This labor distribution optimizes teaching efficacy and efficiency, saving valuable time and energy for teachers to attend to other important matters.

Furthermore, teachers who are proficient in collaborating with artificial intelligence can utilize AI to tailor personalized teaching plans and methods for each individual student. For example, teachers can employ AI tools to gather and analyze students' homework and test results, identifying areas where they may require additional assistance and developing tailored academic improvement plans for each student.

Improving Traditional Teaching Evaluation Methods and Constructing a Diversified Examination Model

With the popularity of ChatGPT among the student community, many college teachers strictly prohibit students from using content-generating AI products in the classroom, homework and other learning scenarios, so as to ensure the fairness of the teaching evaluation process and the independence of students' thinking. However, in the process of teaching practice, there are still many students who use ChatGPT to complete their assignments or write essays in order to get higher grades.

The famous American psychologist B. S. Bloom believes that (Bloom, 1987): the main role of educational evaluation is "to improve teaching". This evaluation ideology believes that the evaluation of the teaching process should be given more attention and teaching evaluation should run throughout the teaching process. Therefore, there is an urgent need to eliminate the "only paper" and "only report" summative evaluation methods popular in colleges and universities, in order to reduce the proportion of single-text learning evaluation in students' grades. At the same time, multiple examination modes such as impromptu speeches and scenario shooting should be constructed to reduce students' dependence on content-generating AI products, encourage students to think independently, and promote the development of creative thinking. Meanwhile, for text-based learning assessment, teachers can provide students with good guidance on the use of ChatGPT and limit the scope and use of content-generating AI products in assignments. Learners should be required to truthfully report the extent of ChatGPT use, and add explanations of the viewpoints, lines of logic and argumentative ideas in the assignments, so as to achieve the multiple goals of completing the assignments with high quality, improving critical thinking skills, and promoting scientific evaluation (Zhang, 2023).

Enhance the Digital Literacy and Cultivate High-quality Talents

Digital literacy is a comprehensive concept that refers to people's critical use of digital technology, encompassing the comprehensive abilities to access, understand, communicate, integrate, and create with digital resources while also possessing awareness of security and cultural literacy (GENG, 2020). In the era of deep integration between education and artificial intelligence, harnessing the power of technology to enhance education requires continuous improvement of digital literacy for both teachers and students. Teachers need to receive training in new educational technologies, embrace the changes brought about by technology, and apply these technologies to solve pedagogical issues, thus achieving a true fusion of technology and educational instruction. Students, on the other hand, need to learn how to utilize new technologies effectively while also learning to mitigate their potential negative impacts and develop independent thinking skills.

Furthermore, the emergence of new technologies like ChatGPT may lead to a decline in the significance of rote memorization-based knowledge, inevitably resulting in changes to educational content. Therefore, a shift in emphasis within educational content is necessary to cultivate high-quality talents.

Conclusion

The ChatGPT fervor has brought new opportunities and challenges to EST translation teaching. It can empower both educators and learners by providing learning resources, lesson plans, and more. However, due to the lack of digital literacy, an excessive reliance and misuse of ChatGPT can have a counterproductive effect, impeding the normal flow of teaching and learning. Despite the controversies, the arrival of ChatGPT is a reality and will continue to influence foreign language education and society in the long run. It necessitates a re-evaluation of the human-machine relationship, shifting from a negative machine replacement mindset to a collaborative human-machine approach. Emphasizing the role of human educators and learners in the teaching process, we can steer the way in innovation and transformation in foreign language education. As ChatGPT's impact endures in the future, it calls for a thoughtful consideration of its implications on language teaching and the broader socioeconomic landscape.

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