



Practical Study on the Use of Generative AI in University English Writing Instruction

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Abstract. Generative AI's powerful information gathering and human-like language generation capabilities have garnered significant attention in the education sector, sparking a new wave of intelligent teaching reform. This paper analyzes university English writing instruction involving LLMs (Large language Models) from an activity theory perspective. It explores how teachers can utilize LLMs in preparing and organizing writing activities while actively mitigating potential risks associated with new technology. The study reconstructs AI-enabled English writing skills in the digital era, aiming to offer new perspectives for developing a human-machine collaborative smart foreign language education system.

Keywords: English writing; LLMs; Foreign language teaching

1 Introduction

At the 2023 World Digital Education Conference, Wu Yan, Deputy Minister of Education of China, emphasized that "Digital technology, represented by artificial intelligence, is changing traditional educational concepts and paradigms and reshaping the form of higher education, which has become a global consensus"^[1]. Large language model (LLM) is a type of natural language processing model based on deep learning neural networks. This model, through the learning and training of a general language model with large-scale parameters, is able to understand and simulate human language abilities and can complete different types of natural language processing tasks according to human instructions (Floridi & Chiriatti, 2020)^[2]. ChatGPT, or "Chat Generative Pre-trained Transformer," as one of these models, is an interactive dialogue model introduced by OpenAI on November 30, 2022. From its debut to the release of ChatGPT-4 in March 2023, the tool has shown remarkable progress, from handling textual grammar and syntax to addressing logic, semantics, and emotions. It demonstrates a profound learning and information integration ability (Hu Jiasheng, 2023)^[3]. ChatGPT, representing generative artificial intelligence (AI), is propelling the transformation and upgrading of traditional foreign language teaching models (He Lianzhen, 2023)^[4], presenting new challenges for how teachers teach and students learn.

The 2020 version of the "Guidelines for College English Teaching"^[5] specifically suggests that in the current era of information and intelligence, modern information

technologies such as multimedia, big data, virtual reality and artificial intelligence should be vital tools in college English education. This requirement presents a new demand for the development of digital competency among teachers in the new era. AI-empowered foreign language teaching is beginning to attract the attention of the foreign language academic community.

2 Literature Review

2.1 English for Specific Purposes (ESP)

The study of English for Specific Purposes (ESP) began in the early 1980s and has continued for 40 years. It refers to English related to a specific profession or discipline and can be divided into several types. For example, based on learners' purposes and application scenarios, Jordan^[6] classifies ESP into two main branches: English for Occupational Purposes (EOP) and English for Academic Purposes (EAP), which greatly differ from General English. ESP combines language learning with acquiring professional knowledge, helping bridge the gap between learning and application by tailoring language teaching content to the specific features of the targeted disciplines. Strevens^[7] claimed that ESP teaching has four absolute characteristics: ① the curriculum design must meet the specific needs of the learners; ② the curriculum content must relate to certain disciplines, professions, or activities; ③ emphasis should be on language usage, especially in grammar, vocabulary, and discourse; ④ it must be in clear contrast to General English (EGP).

2.2 AI-Enabled English Writing Instruction

Supported by advanced algorithms, LLMs can perform several tasks in language teaching: (1) collecting, analyzing, and processing vast amounts of internet data; (2) learning and mimicking human language to generate human-like texts for use as chatbots; (3) translating texts into multiple languages; (4) extracting the main ideas of texts to generate summaries or outlines; (5) creating personalized plans based on requests.

Initially, large language models in writing instruction often acted as assessment experts, helping teachers correct students' compositions. This application can improve teachers' work efficiency or assist students in independently practicing writing, following traditional practice patterns. Currently, AI-based English correction platforms have been introduced in many universities. Writing practice in English learning mainly involves creating essays. AI correction platforms enable students to receive objective feedback on their essays immediately. Additionally, large language models can act as language advisors, assisting in English writing instruction by revising and polishing students' compositions and guiding them to distinguish between formal and informal English language. Register awareness is a significant challenge for advanced English learners. Providing students with similar-themed texts of different registers can visually demonstrate register differences, but such materials are hard to find. In this case, using large language models to generate such texts is an ideal solution.

However, existing research primarily focuses on theoretical discussions from the teacher's perspective (Guo Qian, 2023)^[8]; using ChatGPT as an intelligent assistant to aid teachers in teaching and research activities and lesson preparation, providing real-time teaching evaluation, and replacing teachers in repetitive tasks (Hu Jiasheng, 2023^[9]; Hu Zhuanglin, 2023^[10]; Qin yin, 2023^[11]; Chen Mo, 2024^[12]). Cai Wei (2023)^[13] analyzes second language reading activities in a ChatGPT environment from an activity theory perspective. Based on this, this study focuses on English for Specific Purposes (ESP) writing, exploring AI-assisted ESP writing teaching models, and providing a reference for human-machine collaborative foreign language teaching practice and research.

3 LLMs-Assisted ESP Writing Instruction

3.1 Pre-Writing

In the pre-writing stage, teachers act as designers of classroom activities and sources of target language and culture. These roles can partially be fulfilled by LLMs when it is integrated into the writing instruction activities. First, teachers conduct a needs analysis of their students based on the school's professional characteristics and student requirements. Using LLMs, they can create textbooks, record online courses, and build databases. Teachers can quickly and efficiently obtain responses from LLMs, including commonly used professional vocabulary and teaching methods, additional explanations or examples and lesson plans. LLMs can also complete knowledge searches and integration based on prompts. Teachers can easily access a wealth of authentic English texts to provide background knowledge and diverse writing examples for teaching activities. This reduces the burden on teachers for teaching design and output of target language but increases the requirement for mastering prompts for LLMs. LLMs have limitations in providing input materials in the pre-writing stage. Teachers must evaluate and filter AI-generated plans and texts to avoid false or biased content.

This study proposes an "AI-Assisted + Non-AI-Assisted Alternating Teaching Model." It applies AI-assisted knowledge and achieves AI-assisted learning outcomes, alternating both in-class and out-of-class sessions.

1) Out-of-Class AI-Assisted Model

Focus: Independent Learning + Inquiry-Based Learning

Application Scenario 1: AI-Assisted Language Understanding, Professional Knowledge and Output

Language issues + Language output feedback

Enhance independent learning efficiency

Application Scenario 2: AI-Assisted Deep Thinking and Exploration

Challenging tasks + Inspiring tasks

Stimulate reading breadth and thinking depth

3.2 Writing

Traditionally, to enhance classroom teaching efficiency, teachers assign extensive language skill practice for after-class completion, using class time to address key difficulties. With the proliferation of large language models, the ubiquity of teaching resources deepens, allowing any learner to complete most learning tasks using such tools. At this point, continuing to use traditional evaluation methods to assess learning quality is no longer practically meaningful. It requires rethinking and adjusting teaching organization methods to improve and refine evaluation methods.

In face-to-face classroom teaching, teachers review exercises, summarize students' pre-class learning, answer questions, explain key points, and conduct extended training. Teachers ask questions, organize group discussions and encourage students to think and summarize writing methods and techniques regarding content, language, structure, register and professional knowledge. They also guide students in critically evaluating the accuracy, authenticity and reasonableness of reading materials, enhancing analytical and logical thinking skills.

(2) In-class non-AI assistance mode

Focus: Output practice + critical thinking

First level: Continuous, large-scale output training

- Improve accuracy and fluency
- Review the ability to express independently

Second level: Advanced learning tasks

- Critical thinking, the ability to solve complex problems
- The ability to interact with AI

Moreover, LLMs can serve as an online dictionary, translator, and knowledge base. Teachers should actively improve students' human-machine collaboration skills, focusing on prompt use. Students interact with LLMs through prompts, and clearer, more specific prompts yield expected results. In cases of unsatisfactory outcomes, human-machine interaction and negotiation can occur through iterative inquiries, feedback, and example texts, with LLMs continuously adjusting until satisfactory results are achieved.

3.3 Evaluation

In the evaluation stage, teachers typically act as composition reviewers. With LLMs in writing instruction, teachers can guide students to use LLMs for preliminary draft reviews. LLMs can identify language errors like spelling, punctuation and grammar and point out logical issues such as coherence, paragraph structure, and argument support, while providing vocabulary, style, and context suggestions. Students can also submit drafts to AI correction platforms like iWrite, receiving immediate feedback and motivation for improvement. Teachers provide targeted guidance based on system feedback and organize self-evaluation, peer evaluation, and teacher evaluation for essays online or in-class. Students revise and finalize their essays based on evaluations, completing the writing task. Teachers summarize the class's overall writing situation and provide feedback, helping students construct a writing knowledge system and enhance writing

and critical thinking skills. Through practice, we found that for ESP, LLMs can understand students' compositions and provide suitable modification suggestions, generating revised texts based on students' work.

When teachers deliver composition feedback, they usually provide only one or two model essays as references for specific writing topics. However, even after correcting all issues, each student's writing ideas and style remain unique. LLMs generate personalized reference texts based on individual compositions, enabling true personalized learning.

3.4 Reflection

Teachers need to continuously reflect and accumulate experience when using new AI tools for instruction. After the final draft is completed, they should guide students in reflecting on the entire process. Starting from the preparation phase, involving professional reading materials, analyzing model essays, generating and discussing outlines, independent writing, and receiving feedback, LLMs' involvement and teachers' reflections permeate the whole process. Throughout this journey, teachers gain insights into teaching methods and professional knowledge through interactions with LLMs, students and other educators, gradually incorporating them into their cognitive system. After writing and review phases are complete, teachers guide students in reflective activities.

4 Conclusion

Large language models are deeply integrated into foreign language education, profoundly impacting all aspects of foreign language teaching. In this era of knowledge production represented by generative AI, teachers must master how to interact with generative AI, consider how to incorporate it as a teaching resource, and develop targeted teaching strategies. Teachers should fully leverage the advantages and characteristics of offline and online teaching, actively engaging in educational reform research and practice, exploring AI-era English for Specific Purposes writing instruction models, and motivating students to cultivate independent learning and human-machine collaboration skills, supporting their comprehensive development. Foreign language education needs to establish a new teaching paradigm involving AI to achieve the goal of cultivating high-quality interdisciplinary talents.

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