

# ***Exploration of EFL Students' Writing Performance with ChatGPT Assistance and Acceptance of AI Writing Feedback***

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**Abstract:** With the implementing of the new Curriculum standard of Senior English for Chinese Students, more and more attention has been drawn to the cultivation of students' communicative competence, in which writing skills play a vital role. At the same time, advanced artificial intelligence (AI) platforms continuously prove their capability in supporting language learners. The objective of this study was to investigate how AI aids in the improvement of English language learners' writing skills in pedagogical practice, especially in terms of grammar, choice of words and content organisation, as perceived by English as a Foreign Language (EFL) teacher. Utilising a qualitative approach, the research was constructed within a case study design. The data was gathered via the teacher's case analysis under the help of ChatGPT and interviews with the students who provided their writing samples. The results of this study suggest that incorporating AI writing tools can enhance the quality of Chinese EFL students' writing. Additionally, the study's limitations were acknowledged, and recommendations for future research were provided.

## **1. Introduction**

Computer-assisted language learning (CALL) has undergone research and development over the decades and is now considered integral to nearly all classroom language teaching and learning activities (Beatty, 2013)[1]. Ever since the arrive of Artificial Intelligent (AI)-powered platforms, AI writing tool are increasingly used in the process of language learning. These generative AI tools are equipped with natural language processing (NLP) capabilities, enabling them to engage in human-like conversations to perform a variety of tasks. With proper instructions, these tools can help language learners to correct grammatical errors, reconsider the choice of words and apply more suitable content organisation skills in their writing practice. They are user-friendly and efficient, saving time and effort for both students and educators (T. S. Chang et al., 2021; Liu et al., 2024; Fathi, & Rahimi, 2024; Marzuki et al., 2023; Barrot, 2021)[2]. Moreover, AI writing tools are particularly beneficial for digital-era EFL learners with low English proficiency but proper computer literacy. These tools provide immediate feedback and assistance, helping students enhance their writing skills more quickly. Considering the current class size in public schools, it might turn out to be a handy

assistance to both students and teachers.

Although the new AI-powered generative robots have been proved convenient and efficient, the students' acceptance towards these tools is of equal importance. If students are unwilling to incorporate this new tool into their learning, teachers will struggle to implement innovative instructional methods. To explore and understand the underlying reasons of students' acceptance or rejection of ChatGPT as a writing assistant, Davis's (1989) Technology Acceptance Model (TAM) were used to investigate students' perceptions of using the tool[3].

## 2. Literature review

### 2.1 AI-assisted writing

EFL students face a variety of challenges when it comes to writing in English. These challenges can stem from linguistic, cognitive, cultural, educational, affective and technological factors (Hyland, 2003; Grabe, W., & Kaplan, R. B., 1996; Connor, 1996; Ferris, 2013; Horwitz, 2001; Warschauer, 2000)[4], among which issues related to grammar, vocabulary, and cohesion (Hyland, 2003) are of great importance for EFL teachers. However, due to the heavy teaching load brought about by size of class and curriculum arrangement, traditional teacher feedback on student writing have obvious limitations in terms of timeliness, efficiency and personalisation. Thus technology-assisted language learning can play a significant role in EFL writing classrooms.

Early AI tool for automated writing evaluation such as the Criterion Online Writing Service has been checked with its effectiveness and educational implications (Burstein, J., Chodorow, M., & Leacock, C., 2004)[5]. Later, more efforts were devoted to see how well Automated Essay Scoring (AES) systems, which utilize natural language processing (NLP) techniques to evaluate the linguistic aspects of an essay, such as grammar, vocabulary, and discourse, can predict the score that a human rater would likely give (Shermis et al., 2010)[6].

Recently generative AI are showing more perceived benefits in work place (Cardon et al., 2023)[7]. Several studies have explored the use of generative AI tools with EFL learners in higher education to determine if these tools can assist them in academic writing. For instance, Song (2023) found students who received AI-assisted instruction experienced notable improvements in both writing skills and motivation compared to those in the control group. Findings also reveal that doctoral students who engage in iterative and highly interactive processes with a generative AI-powered tool typically perform better in writing tasks. Conversely, students who use AI merely as a supplementary source of information and adhere to a linear writing approach often show lower performance (Nguyen et al, 2024)[8].

### 2.2 Technology Acceptance Model

The choice to adopt a particular technology and the timing of that decision have been extensively researched across multiple fields, influencing business, education, and daily life (Straub, 2009)[9]. With technology literacy increasingly integrated into mandated curricula (Barron, Kemker, Harmes, & Kalaydjian, 2003)[10], schools and teachers are often required to adopt some level of technology. While technology integration decisions are typically made at a higher level, such as by schools or districts, the effectiveness of these implementations is determined by individual adoption behaviours, especially when it comes to individual language learning activities. Therefore, it's important to examine factors such as why one person might embrace a technology while another resists and how social context impacts the decision to adopt.

The Technology Acceptance Model (TAM) developed by Davis (1989) has been applied to a variety of language learning environments to study students' intended learning behaviours[11],

analysing an individual's actual technology usage based on four factors: perceived usefulness (PU), perceived ease of use (PEOU), attitude toward use, and behavioural intention to use the technology. PU refers to the extent to which a person believes that using the technology will enhance their job performance, while PEOU measures the effort required to effectively use the technology. According to the model, an individual's behavioural intention to adopt new technology is influenced by both perceived usefulness (PU) and perceived ease of use (PEOU). If the new technology is user-friendly and easy to adapt, the user's psychological barriers will tend to be broken down and will have more positive attitudes towards the new technology[12].

In this study, Davis's TAM was utilised because of its perceived usefulness and ease of use, which are two important factors in understanding pre-college students' acceptance of ChatGPT as an assisting tool in EFL writing tasks. The study aimed to 1) examine whether ChatGPT can generate proper and personalised help in students' writing; 2) explore whether the feedbacks provided by ChatGPT can gain students' understanding and satisfaction; 3) figure out the acceptance of ChatGPT among Chinese Generation Z senior high students.

### 3. Methodology

#### 3.1 Participants

Forty-two Chinese senior high students (15 females and 27 males) in Shenzhen, China participated in the research, providing their writing samples and feedbacks based on ChatGPT assisted writing. These participants were recruited from the author's own teaching classes and were willing to provide their authentic writing produced during their mid-term exam[13].

According to their performances in the mock exam for the College Entrance Language Examination in China, their English proficiency varied from intermediate to upper-intermediate, which meant their writing samples were more representative compared with previous research on Chinese college students. Their age ranged from 17-18 and had been learning English for at least 10 years at the time of this study. They had proper computer literacy given their growing-up background in one of the most innovative cities in the world but had never used ChatGPT or other similar generative AI to improve their English writing. All of the participants were aware of the purpose of this research and voluntarily attended it and signed the consent forms[14].

#### 3.2 Data Collection

All the participants were taught and instructed by the same teacher, the author herself, and they used the same course materials, syllabus and took part in the mid-term exam on the arranged day and completed their writing of around 120 English words under the given topic within required time limit.

Each participant's writing sample was provided to the teacher in the same online form and had been marked and given individual feedback by the teacher after the exam. For this research, their writings were provided to the ChatGPT with the following instructions:

- 1) Correct grammatical error and give more examples.
- 2) Improve the choice of words and give explanation.
- 3) Give suggestions on content organisation and state the reasons.

After getting the feedbacks from the ChatGPT, those feedbacks were given back to the participants together with a follow-up survey and individual interview to check their understanding of the feedback and their attitudes towards it.

### 3.3 Data Analysis

Quantitatively, a detailed comparison was made between the feedback provided by ChatGPT and the teacher's previous individual feedback, focusing on improvements in grammar, word choice, and content organization. This allows the teacher to assess the potential practicality of AI-assisted writing instruction in senior high school classrooms.

Qualitatively, the participants' learning experiences of ChatGPT-assisted writing were analysed based on their response in the survey and then categorised. This analysis allowed the researcher to gain insights into the students' perceptions of using generative AI, which may have an impact on future course design and their own language learning approaches.

## 4. Results and Discussion

In order to answer the research questions, quantitative data was utilised to examine the effectiveness of ChatGPT in generating feedback on and assisting EFL learners writing and qualitative data to assess students' learning experiences of ChatGPT.

### 4.1 The research question 1: Can ChatGPT generate proper and personalised help in students' writing?

Upon close comparison, ChatGPT identified a greater number of grammatical errors, though many were due to misinterpretations of the handwritten text. While the correct examples provided for these errors were comparable in quantity to the teacher's feedback, ChatGPT's examples lacked variety. This suggests that more specific instructions are necessary to achieve better results. As a student mentioned in the interview, because the machine was unfamiliar with the actual class environment and the students' learning goal, it may not be able to fully use the grammar, phrases and sentence patterns students have just learned in class. Thus, it's important to note that the teacher's feedback was often more targeted, as the teacher was more familiar with the student and better aware of the most pressing issues that needed to be addressed at a given stage[15].

Besides, after comparing machine feedback of each student, the teacher noted that the revised versions were often lacking in variation, which means the machine tends to provide contents based on the writing task itself rather than students' needs. However, among all the participants, five of them chose to give further instructions to the machine to get a more detailed and personalised suggestions, which led to a better outcome of their satisfaction towards the machine[16].

### 4.2 The research question 2: Can the feedbacks provided by ChatGPT gain students' understanding and satisfaction?

According to the survey, 69% of the students found ChatGPT's feedback "easy to understand," and 59% agreed that the feedback was detailed and was helpful in correcting grammatical errors, yet some of them reflected on the results and considered them as "a bit repetitive" in those two categories. In terms of the word of choice, 71% of the students mentioned the strengths of machine as "making the expressions more natural and direct" to achieve the goal of simple and effective communication. 50% of them saw the feedback on content organisation as insightful and when asked about the reason for this point of view, they explained that the suggestions from the machine were almost the same as what they could gain from the textbook and classroom learning[17].

Aside from feedbacks, students agreed that using ChatGPT could save them time from waiting for teacher's feedback. However, a machine generated feedback lacks face-to-face interaction which made the message more difficult to remember and apply. According to one student, he even found

himself “losing the incentive to read” through a digital screen[18].

Through the interview with students, the teacher noticed that the machine generated feedback could sometimes contradict to the teaching objectives in classrooms. To give an example, a student used a sentence structure learned in class to emphasis his strong belief while it was considered unnecessary by the machine. To some students, the feedback from the machine was effective even excessive to some extent given their English proficiency as the feedback to a writing sample of 120 words could extend to around 900 words.

### **4.3 The research question 3: What is the acceptance of ChatGPT among Chinese Generation Z senior high students?**

In the students’ survey responses, nearly two-thirds agreed that they would use generative AI tools in the future to support their EFL writing, and half expressed a willingness to continue using these tools. The results indicated that the AI tool heightened their awareness of grammatical errors and improper word choices, which they noted were “not easily noticed in their daily practice.” Additionally, students highlighted that generative AI tools could be highly efficient for self-directed study, and they valued the examples provided based on their word choices, stating that these examples helped them better understand the proper use of English words in their writing. Their responses and comments demonstrated their recognition of the perceived usefulness (PU) and perceived ease of use (PEOU) of these tools in EFL writing[19]. According to Davis (1989), PU and PEOU are critical factors in the Technology Acceptance Model, which help students decide whether to adopt and use new technology. Furthermore, some participants, particularly those with higher English proficiency, reported having a rewarding self-learning experience using ChatGPT once they learned how to give effective instructions to obtain optimal responses. They found that self-directed interaction with the generative AI enhanced their writing skills and, ultimately, they developed greater confidence in their EFL writing for future practice[20].

## **5. Conclusion**

This study sought to examine the possibility of incorporating of ChatGPT, a generative AI tool to give automated writing feedback, in 42 senior high students recruited from two EFL classes and to explore students’ acceptance of its use in EFL writing. The results exhibited that the AI-generated feedback could partially replace the teacher’s feedback in students’ daily writing practice but lacked variety and individualised feedback. Yet it can satisfy students’ needs of offering suggestions in use of grammar and choice of words and reinforce their knowledge of content organisation and also can save them time waiting for teachers’ feedback. Students improved their ability to use correct grammar and had better understanding on the choice of words based on the examples provided by the AI tool, which can benefit their future writing practice. As shown in previous studies of AI-based automated writing feedback (Chang, T. S., Li, Y., Huang, H. W., & Whitfield, B., 2021; Song, C. & Song, Y., 2023), students also acknowledged that the AI’s feedback was instrumental in enhancing their writing skills and boosting their confidence for future EFL writing.

There are some limitations in this current research. First, the study only recruited participants of the same age and similar EFL proficiency within the same school. They may not be able to represent the whole senior high EFL population across China. Replication studies are needed to assess the generalisability of these findings. Future researches can also be conducted to examine the effectiveness of applying generative AI in different types of writing practice. Second, the study only included 42 participants and their writing samples under the same topic. Future studies may need to do long-term observation to determine the improvement in participants’ EFL writing abilities. Besides, the participants showed great reflective skills when comprehending AI’s feedback, which may result



from their comparatively solid language knowledge. However, teachers should support students in developing this vital skill when accepting AI's feedback in order to help them become independent and self-reflective in EFL writing process.

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