

# Evaluation of the Effect of Generative AI in English Writing Class

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**Abstract.** The application of artificial intelligence technology in the global education field is becoming more and more extensive. In the process of English learning, writing has always been a difficulty for students. Therefore, how to integrate artificial intelligence technology into the writing classroom is an urgent appeal for English teachers. This paper compares the advantages and disadvantages of various generative artificial intelligence tools and analyzes the effect of generative artificial intelligence on improving students' writing levels in high school writing classrooms through an empirical study. However, there is still some uncertainty in generative AI, with some predictable and unpredictable risks. When using it for teaching, teachers should fully consider and avoid risks as much as possible, and pay more attention to the cultivation of students' higher-rank thinking abilities, especially critical thinking and creative thinking. At the same time, teachers should constantly improve their digital literacy, constantly explore the use of new technologies, and promote the integration of advanced technologies with classroom teaching to make the classroom more colorful, active, and efficient.

**Keywords:** Generative AI, English writing, effect.

## 1. Introduction

In recent years, corrective feedback has become synchronous and immediate, either as part of available cloud-based word processing suites or as stand-alone apps or software suites that enable writing to be produced more accurately [1-3]. According to Dale and Viethen, the biggest development that AI has brought to writing has been AI-based autocompletion of sentence and phrase and alternative wording suggestions [4,5]. For example, ChatGPT-assisted English as a Foreign Language (EFL) writing feedback helps to improve the current ambiguous feedback mode, enhances the language language teaching resources, improves the reliability and validity of writing feedback, and helps to increase the discourse interaction, and thus sharpening students' pragmatic skills [6]. Artificial intelligence-based natural language processing technology (e.g., ChatGPT) has significant benefits and functions in the application of school English writing and can improve the quality and efficiency of students' writing [7]. Other generative AI tools such as the AI Chatbot, have been shown to help reduce students' anxiety when learning English writing. By combining with traditional teaching, AI tools can better promote the improvement of students' English writing levels.

It is true previous studies have shed light on the influence of these tools on students' writing. However, it is still unclear how generative AI writing evaluation tools in combination with AI-assisted teaching methods affect the quality of students' writing outcomes. The purpose of this research is to investigate how generative AI can assist teachers in providing personalized feedback and resources to students and to explore the impact of generative AI on the development of students' writing skills.

## 2. Method

### 2.1. Research Design

This study was conducted using quantitative and qualitative methods. The data for this study was collected using the Spark Desk of Iflytek, to ensure a comprehensive understanding of the evaluation of the impact of generative AI in the English writing classroom. Through a combination of data

collection methods, this study gathered diverse and reliable data to analyze and draw meaningful conclusions. Furthermore, to investigate the effect of AI on students' deep-thinking ability, a qualitative method, with interviews, was used to observe the in-depth perception of the impact of AI tools on students' writing quality, especially in terms of critical thinking ability and creative ability. Before experimenting, the researcher hypothesized three hypotheses.

Hypothesis 1: Generative AI can provide students with personalized learning paths and resources for writing.

Hypothesis 2: Generative AI can assist teachers in developing more personalized lesson plans.

Hypothesis 3: Generative artificial intelligence can improve both the quality of English writing teaching and students' writing ability.

Based on these hypotheses, the researcher experimented and proceeded as follows.

First, collect writing samples from students before and after the integration of generative AI.

Second, analyze writing samples using qualitative and quantitative methods to assess improvements in writing skills and instructional quality.

Third, conduct interviews with students to gather their perceptions and experiences.

Fourth, compare survey and interview results to identify common themes and trends.

To explore a deeper insight into AI's impact on students' English writing, a qualitative research method was also employed in this research. Semi-structured interviews were conducted in this study to gather student's perspectives on the use of AI tools in English writing classes.

## 2.2. Research Participants

This study investigated how generative AI can help teachers provide personalized feedback and resources to students and how generative AI affects the development of students' writing skills. The sample selection is primarily based on student's practical experience with classroom writing exercises, accessibility, willingness to participate, and teaching competence in advanced courses such as English writing for the Chinese college entrance exam. These courses often require a higher level of grammatical knowledge and a deeper understanding of discourse structure.

All the students had practiced this kind of English writing for at least a year--a kind of English writing test in the Chinese college entrance examination, in which students have to read and then complete an unfinished story. Teachers had at least three years of experience in teaching EFL and at least two years of experience in teaching English writing "Continue the story". In classroom practice, the AI tools served as supplementary teaching aids. They helped with grammar checking, paraphrasing, and content generation, and offered suggestions for increasing variety, correcting errors, and improving the clarity and coherence of students' writing.

The participants of the study consisted of students from two classes in the first year of high school in China. 24-26 boys aged 16-17 and girls in a similar situation who had studied English for at least 6 years formed one class each.

The data collected was analyzed using an AI tool--Spark Desk by Iflytek--which allowed for a systematic examination of the relationships and patterns within the dataset. Through the use of experimentation, this investigation uncovered important insights and enabled a rigorous analysis of the research findings.

## 2.3. Data Collection Procedure

After establishing the validity and reliability of the data collection and interview protocol on the effects of AI writing tools used by EFL students on their writing quality, the experiment is conducted.

In the controlled group, the teacher presented and explained one of the composition tasks to the students in the first lesson. 30 minutes later, the student's written work was collected and the teacher assessed, analyzed, and discussed the work with the students without AI support. In the second lesson, after the explanation, the teacher gave an essay on a similar topic. After collecting the students' work, he once again analyzed the level of knowledge transfer and the effectiveness of the lesson based on grammar, vocabulary, and other assessment criteria for the essay.

In the first lesson of the experimental group, the teacher presented and explained the same composition tasks to the students. 30 minutes later, the teacher used the AI tool Spark Desk to evaluate and analyze the composition task. In the second lesson, the teacher used generative AI tools such as Sora, Quillbot, Grammarly, or Chatgpt to support the students in explaining the essay. In the second lesson, the teacher then presented and explained the second essay task, which contained a similar topic to the first, and the students were asked to complete it within 30 minutes.

The teacher then recorded the students' final performance data using the same assessment criteria in both the control group and the experimental group. In the short-term run, the teacher compared the effect between the control group and the experiment group. In the long-term experiment, students' previous grades during a semester were also recorded to compare performance before and after AI-assisted academic performance.

In addition, after conducting AI class methods in English writing class, some participants were selected to get involved in the semi-structured interview. Before starting each interview, the teacher informed the participants about the aims of the study, the interview procedure, and the strict approach to data protection. During the interview, the teacher began with general questions about the experience of learning English writing using AI writing tools, fostering a relaxed atmosphere conducive to open discussion. Gradually, the teacher asked more specific questions aligned with the interview protocol, elaborating on the individual AI writing tools they had used and their impact on students' different perceptions of writing quality. At the end of each interview, the teacher thanked the participants for their contributions and offered them the opportunity to ask questions about the study or make further comments. All data collected, including interview recordings and notes, were stored securely to protect the privacy of the participants and to enable efficient data management for the subsequent stages of data analysis and research reports. The process of the experiment is summarized in Fig. 1.

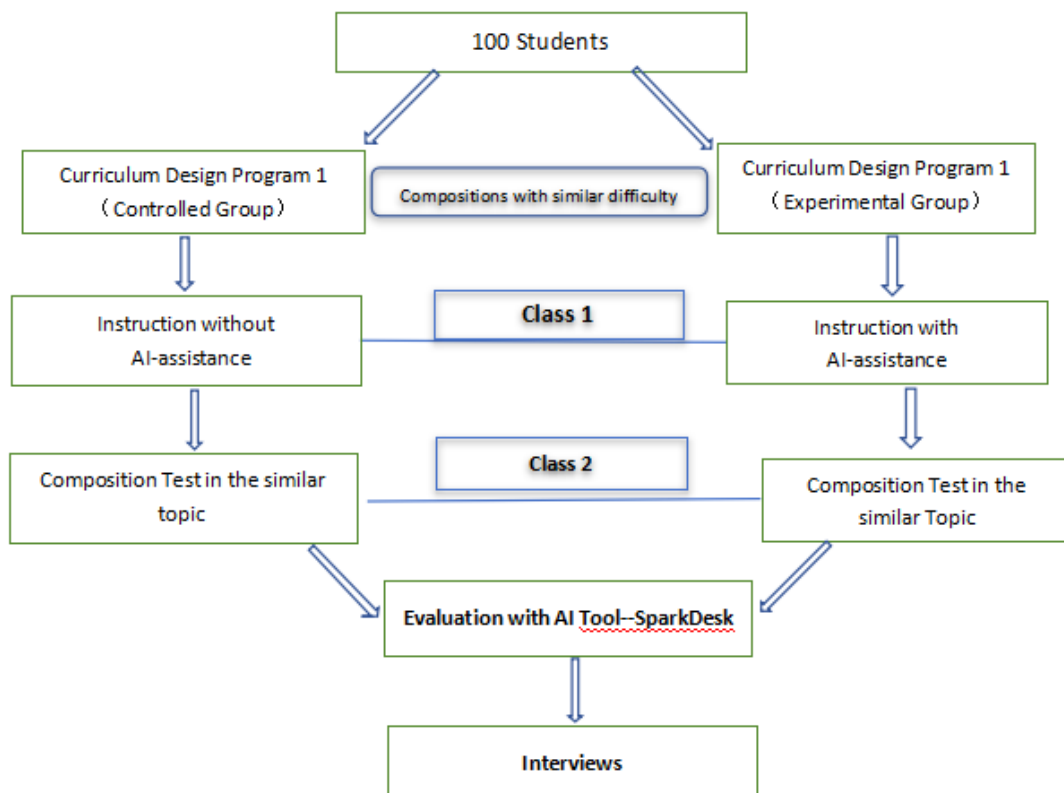
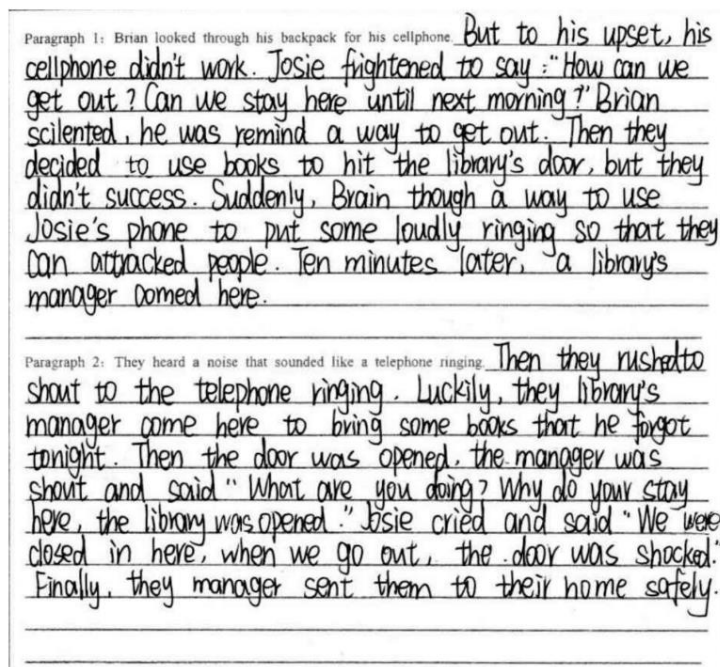


Figure 1. Experiment procedure

## 2.4. Data Analysis

After ensuring a comprehensive, ethical, and effective data collection procedure for the research on the use of AI writing tools and their impact on EFL teaching, 100 samples were collected to evaluate the effect. Fig. 2 shows a writing sample from a student's test paper.



**Figure 2.** A student's writing sample

By providing detailed evaluation results, SparkDesk can offer personalized reports to each student. Student academic performance data was collected through SparkDesk after the essay test. The diagnostic report, produced by the large language model, shows clearly the score of the above student, who scores 13 out of 25 in this essay test. From this report, it is clear that although the word count of her text is sufficient, the structure and content still need improvement and her major weakness lies in grammar and vocabulary. Compared to the highest score in the class and the highest score in the grade, she should still improve her writing skills, which provides students with an effective assessment opportunity.

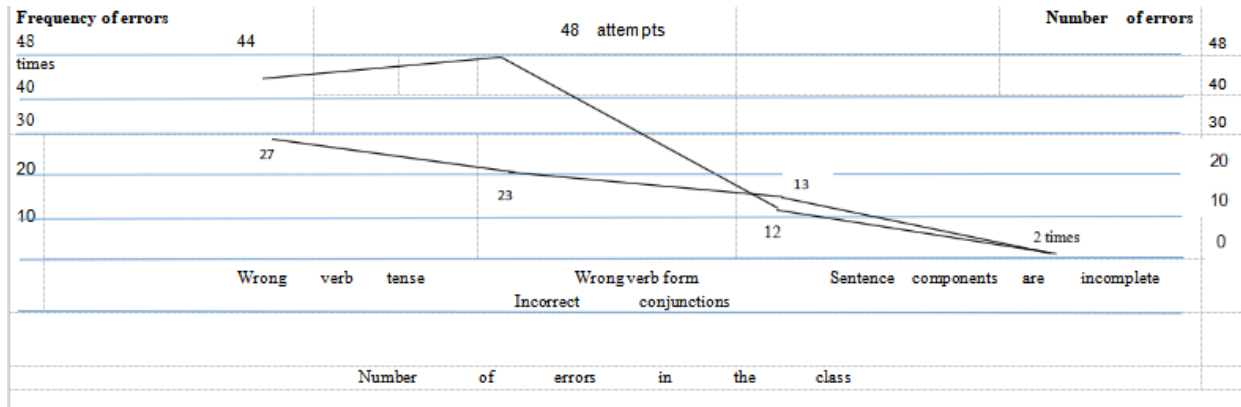
In addition, SparkDesk also gives personalized advice on how to improve writing based on previous data. Another feedback paper shows a personalized writing analysis and resources that students have received from SparkDesk. Depending on what suggestions the AI makes, students can improve their writing style.

For teachers, SparkDesk analyzes whole-class data and makes it clear to the teacher the typical grade ranges and error types, the obvious improvements and regressions of some students, and even details in students' writing skills. The report shows the performance of the whole class in this writing task, which gives the teacher an overview of the academic performance of the whole class. It is clear from the diagnostic report that the number of students in the gear is the largest, compared with the relatively small percentage of the number in the second gear, among which the students in the top gear make up the smallest proportion, indicating the potential for improvement.

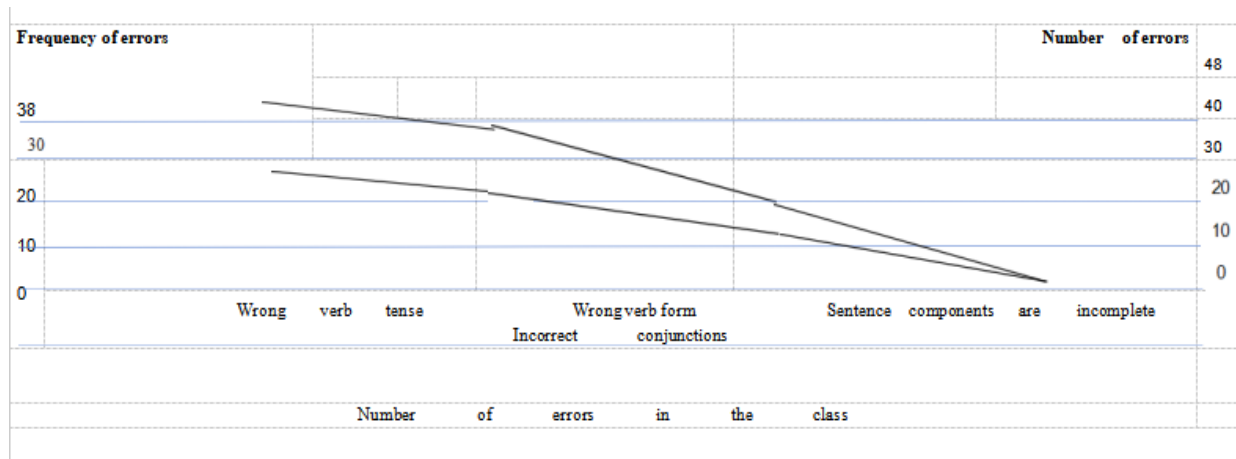
Details in students' writing also can be shown in reports for teachers. According to the statistics of AI big data, it can be seen that there is a certain psychological description in the answers of the students in this class, but the character description is a little insufficient. Descriptive diagnosis made by AI provides a powerful tool for a teacher to supplement their teaching with a suitable writing improvement approach.

SparkDesk compares the data collected respectively from the traditional class and AI-assisted class, uncovering the typical errors in students' writing showing a downward trend after the AI-assisted class in the short-run experiment. As for the grammatical error frequency of the whole class, the

comparison between the traditional class (Fig. 3) and the AI-assisted class (Fig. 4) could be seen in linear graphs. The linear graphs reveal the frequency of errors and numbers of errors in the controlled class and experimental class, which indicate an overall downward trend in the error frequency and number in the experiential group, especially in the verb tense errors and verb form errors.

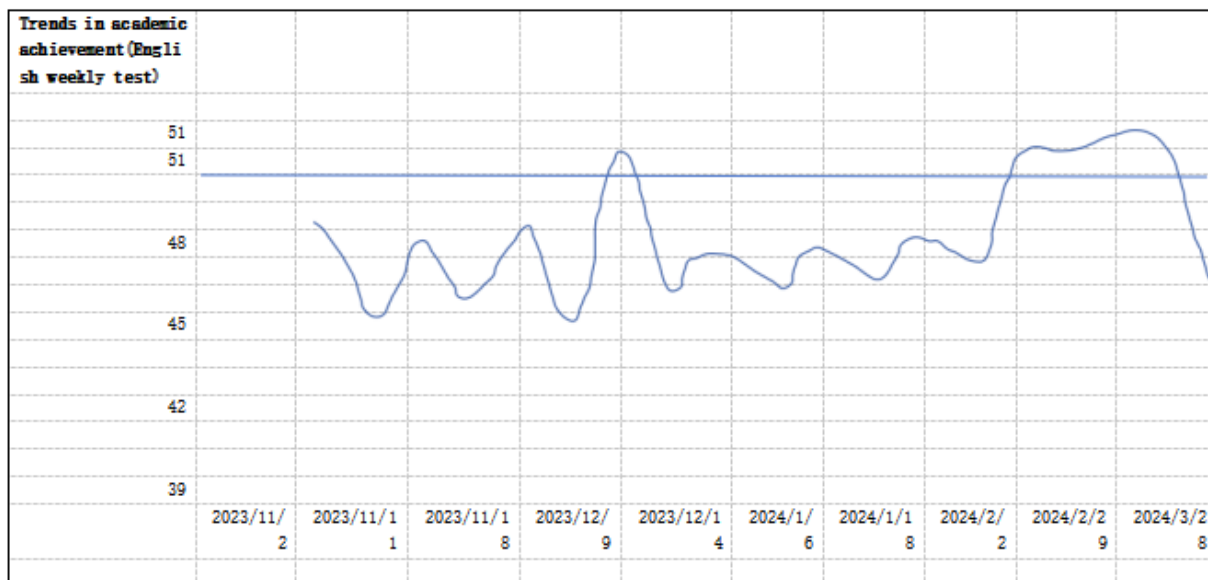


**Figure 3.** Error frequency in writing without AI assisted



**Figure 4.** Error frequency in writing with AI-assisted

In the long-term experiment, the data from a semester were gathered to observe the thorough impact of AI tools on English writing tests. Compared to the traditional classes in this grade, the experiment group showed an obvious transcendence over the standard score of this grade, especially when this class previously fell behind the other classes at first, indicating that AI tools have great potential in improving students' writing outcomes, as is shown in Fig. 5.



**Figure 5.** Improvement of students' performance in English language subjects in the long run (especially composition scores).

To explore a deeper insight into AI's impact on students' writing ability, semi-structured interviews were conducted to investigate students' perceptions of AI-assisted teaching methods. Questions for students include: What do you think of the use of generative AI in English writing teaching overall? What useful English writing learning resources have generative AI provided for you? Do you think the feedback given by generative AI is accurate and timely? What specific improvements has this feedback brought to your English writing? Can generative AI provide personalized learning suggestions based on your learning level and needs? During the use process, what limitations or shortcomings have you found in generative AI?

After the interview, qualitative data were collected to analyze student's attitudes toward AI-assisted writing teaching. The participant's overall feeling about this teaching method is positive and novelty, which enhances the interests of students. They point out that the learning resources are rich and varied, broadening their mindset. Based on the accuracy of feedback, the materials are accurate timely, and helpful for correction. As for the improvement effect, there is significant improvement and skill enhancement in the outcomes. The personalized suggestions made by AI tools are partially satisfactory for the students, they are looking forward to optimization. However, there are still limitations and shortcomings in this teaching method, which include difficulty in utilizing resources and mechanical feedback.

In conclusion, it can be drawn from the quantitative and qualitative methods that generative AI can provide students with personalized learning paths and resources for writing. What's more, generative AI can help teachers develop more personalized lesson plans. Therefore, generative AI can improve the quality of English writing teaching and enhance students' writing ability and creativity.

### 3. Challenges and Opportunities for Teachers

Teachers are faced with the challenges and opportunities when entering the era of AI. With the wave of AI rolling in, educators should keep up with technology, which requires us to stay updated with the latest AI tools and technologies to effectively integrate them into teaching to elevate the quality of EFL student writing [8]. These tools enhance the teaching process by providing timely and individualized feedback, promoting student engagement, and increasing efficiency in grading [9]. While AI can provide effective grading and feedback, teachers need to ensure that students still receive equal human interaction and support. Besides, adopting AI in the classroom can also improve students' mental state when they are faced with difficult tasks. Some researches indicate that AI tools

help to alleviate students' anxiety in English writing classrooms. What's more, Leveling AI for differentiated instruction is equally significant for teaching practice. Teachers can use AI tools to differentiate instruction and meet the unique needs of each student, promoting more inclusive and effective learning environments. What matters most is, to prepare students for a future with AI, which equips students with one of the most vital abilities in the future job market. It also should be pointed out that teachers have an opportunity to educate students about the ethical and responsive use of AI, preparing them for a future where these technologies are valid. To some extent, educators and researchers are responsible for finding ways to allow students to use the tools appropriately, and integrating their use into instruction whenever possible [10].

#### 4. Conclusion

Generative AI tools provide powerful solutions to analyze students' writing evaluations improve students' writing skills and supplement teachers with personalized teaching plans and lessons tailored to students' needs. Although advantages are obvious in AI-assisted evaluation and teaching, the limitations still should be pointed out to avoid biases and deviations.

Overall, generative AI benefits both language educators and students. For students, there are effects on student writing skills due to its improvement in grammar and spelling. There is also enhancement of creative thinking based on the development of critical thinking Skills. For teachers, there are effects on teacher instruction and assessment and changes in teaching strategies based on the efficient and personalized grading and feedback system.

It is important to acknowledge the limitations of the chosen methodology, such as the limited quantity of samples and technological accessibility. Further research is still needed to explore the long-term effectiveness, the transfer effect, the improvement of metacognition, and the enhancement of critical thinking ability.

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