

Chinese University Students' Perception of the Use of Generative AI in English Writing

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ABSTRACT

Generative AI (Gen AI) has gained prominence in higher education for English writing assistance, while empirical research focusing on college students, the primary stakeholders, remains scarce. This study aims to explore students' use of Gen AI and provide recommendations based on the challenges encountered in its use. A questionnaire was distributed, collecting 833 responses from undergraduate and graduate students at seven universities in Central, Eastern, and Northern China. The data were analyzed using a one-sample t-test to investigate the usage patterns, benefits, and challenges encountered by students employing Gen AI for English writing. The results indicate that ChatGPT is the most popular Gen AI tool among Chinese students. The findings also reveal five primary usage methods and highlight the benefits and associated challenges. Based on these results, we propose recommendations for optimizing the use of Gen AI in English writing.

Keywords: *Generative AI, English writing, College students.*

1. INTRODUCTION

Generative Artificial Intelligence (Gen AI) is an AI field that generates multimodal content such as text, images, audio, video, and code based on advanced algorithms, models, and rules [1]. Driven by advanced natural language understanding and generation capabilities, the integration of Gen AI in higher education has sparked widespread discussion, with some scholars advocating its powerful learning logic and conversational abilities as valuable tools for personalized learning and academic research [2].

However, despite its advanced capacities, research on the application of Gen AI in writing, including English writing, remains exploratory. On the one hand, Gen AI's deep learning-based natural language processing capabilities have opened new possibilities for foreign language education and writing, gaining widespread support among language educators. On the other hand, some scholars contend that it currently still has limitations, such as but not limited to dependence on data quality, ethical concerns, and reliance on technology [3].

Despite the increasing concerns and prerequisites for thorough investigations, there is a scarcity of studies that explore the actual usage of generative AI by college students, the principal practitioners of English writing. Therefore, this study aims to evaluate students' perceptions of Gen AI in English writing assistance, with a specific emphasis on their personal usage, perceived benefits, and encountered challenges. Based on these results, recommendations are proposed for its optimization. By undertaking this research, we aim to bridge the existing gap in students' perspectives on Gen AI's assistance in English writing.

2. LITERATURE REVIEW

Based on functional value, AI technology can be classified into Analytical Artificial Intelligence (Analytical AI) and Generative AI [4]. Unlike Analytical AI, which relies on extensive known data to create discriminative models for data analysis and predictive tasks such as email recognition and algorithmic recommendations [5], Gen AI primarily uses large language models (LLMs) for training. This enables it to achieve human-like natural language understanding and generation [6]. Consequently, Gen AI excels not

only in producing high-quality natural language but also in interpreting open-domain language tasks through generative frameworks. It can display outstanding performance with limited or even zero-labelled data, requiring only minimal adjustments to the output format [7].

Therefore, some scholars have emphasized the promising future of integrating Gen AI, particularly ChatGPT, into English writing practices. Gen AI's robust grammar and spell-checking functions can partially mitigate the limitations of the traditional writing feedback model, which centers on teachers and focuses on specific areas, allowing students to be more actively engaged in the writing process and cover a broader range of topics [8]. Barrot, a scholar from the Philippines, noted that ChatGPT's extensive knowledge base and coherent text output make it an effective tool for enhancing writing and providing corrective feedback [9]. Furthermore, students are encouraged to use ChatGPT effectively by employing iterative questioning to refine responses [10]. Within the context of AI-based English academic writing and instruction, scholars have further detailed how formal and concise prompts can maximize ChatGPT's potential to generate outlines and ideas and enhance the quality of academic writing [11]. With its powerful creation and outline generation capabilities, it also supports students by providing abundant writing ideas. In the realm of scientific writing, scholars have pointed out that ChatGPT can aid in brainstorming research questions, conducting literature reviews to summarize key points, identifying gaps and limitations in existing research, processing data for visualizations and interpretations, drafting outlines, proofreading, and responding to editorial feedback [12].

However, concerns about the impact of Gen AI on academic integrity, creativity, and ethical use remain significant. For instance, Wang Y.M. et al. [13] identified four main challenges faced by the usage of Gen AI: its powerful text generation capabilities could enable academic dishonesty, compromise assessment mechanisms, and affect students' academic integrity; repeated use might foster dependency, reducing personal creativity; the reliability and safety of generated content are uncertain; and issues surrounding data privacy, bias, and ownership require attention. While noting the considerable potential of Gen AI, Barrot recognized that ChatGPT can produce inaccurate or unintelligible responses and is sensitive to slight adjustments in input phrasing or repeated prompts,

resulting in inconsistent answers. Furthermore, its functionality may be limited when addressing plagiarism or adapting text for specific audiences, and it exhibits a certain degree of template rigidity [9]. Within the context of scientific writing, there are concerns about its use in generating plagiarized content, fabricating data, producing biased or erroneous material, and fostering excessive dependence [12]. U.S. researchers assessing L2 writing accuracy noted that while ChatGPT shows promise in understanding and evaluating syntactic and lexical complexity, accuracy, and fluency, its ability to detect errors in lower-level writing is limited, and maintaining consistency across repeated checks proved challenging [14].

In summary, existing research on Gen AI-assisted English writing primarily emphasizes the teaching perspective [15], leaving a significant gap in understanding its application and impact from the college students' perspective. In view of this, the present study aims to investigate the usage of Gen AI-assisted English writing by college students in China. Specifically, the study addresses the following questions:

- 1. How do Chinese college students use Gen AI for English writing assistance?
- 2. What benefits do Chinese college students experience when using Gen AI in English writing?
- 3. What challenges do Chinese college students face when using Gen AI in English writing?

3. METHODOLOGY

3.1 Research Participants

This research selected both undergraduate and graduate students from Chinese universities who had experience using Gen AI in English writing as research participants. 954 responses were received from students at seven universities in central, northern, and eastern China. ("Table 1")

Table 1. Demographic information of participants

	Items	Number(n=954)	Percentage(%)
Fields of study	Natural sciences	159	16.67%
	Agricultural sciences	5	0.52%
	Medical sciences	10	1.05%
	Engineering and technology	609	63.84%
	Humanities	121	12.68%
	Social sciences	50	5.24%
Undergraduate student	First year	500	79.11%
	Second year	108	17.09%
	Third year	17	2.69%
	Last year	7	1.11%
Graduate student	First year	224	69.57%
	Second year	83	25.78%
	Last year	15	4.66%

3.2 Instrument

Based on the research conducted by Ngo [16] and Stojanov [17], a customized questionnaire titled "Survey on College Students' Use of ChatGPT for English Writing Assistance" was developed to address the study's objectives. This questionnaire, with ChatGPT serving as a representative of Gen AI, consisted of four main sections. The first section collected demographic information, encompassing aspects such as the types of Gen AI tools utilized, the participants' universities, fields of study, academic levels, and school years (5 questions). The second section concentrated on students' usage of Gen AI specifically for English writing and consisted of 10 questions. The third section explored the benefits and challenges encountered by students when employing Gen AI in their writing processes, consisting of 20 items. Responses for these 30 items were measured on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Finally, the fourth section included open-ended questions aimed at gaining deeper insights into students' usage methods and the challenges they encountered.

To ensure the reliability and validity of the questionnaire, a pilot test was conducted before the formal survey. A total of 105 samples were collected, including 90 valid responses. Analyzed by the SPSSAU platform, the overall Cronbach's alpha coefficient of the questionnaire was 0.842 and the KMO value was 0.676, indicating that the questionnaire was suitable for extracting information.

3.3 Data Collection and Analysis

The formal survey was conducted using the public online questionnaire platform SoJump (questionnaire star), from September 6 to October 7, 2024. A total of 954 responses were collected. To ensure the accuracy and reliability of the data, lie-testing questions were set in the questionnaire. Ultimately, a total of 833 responses passed the test and were deemed valid. The data were analyzed using SPSS26 software, employing a one-sample t-test to evaluate the research hypotheses, and thus concluded the usages, advantages, and challenges of college students' use of Gen AI to assist English writing.

Before analyzing the results, the reliability and validity of the formal questionnaire were evaluated. The reliability was assessed using the SPSSAU platform, with a Cronbach's alpha coefficient of 0.882, indicating strong internal consistency and confirming the reliability of the instrument for the study. Validity was assessed through factor analysis, with a KMO measure of 0.891, suggesting that the sample size was adequate for factor analysis. Bartlett's test of sphericity yielded a p-value of 0.000, which is below the 0.01 threshold, supporting the validity of the questionnaire structure.

4. RESULTS

4.1 Students' Use of Gen AI in English Writing

The study explored the types of generative AI tools used by college students, revealing a notable variation in preferences (See "Table 2"). Among the most widely used tools, OpenAI's ChatGPT models, particularly versions 3.5 and 4.0, were the most popular, with a significant number of students relying on these for their writing tasks. In addition to OpenAI's offerings, Ernie Bot, another leading generative AI tool, was also widely adopted,

highlighting its prominence among students. Other AI tools, though less commonly used, still had a considerable presence. These included Kimi, ByteDance's Doubao, and iFlytek Spark, each with a moderate level of user adoption. Additionally, AI platforms such as Qwen and Tencent Yuanbao, while not as frequently utilized, also contributed to the diversity of generative AI tools in use. Overall, the findings suggest that a few major AI tools dominate student usage, while others maintain a smaller but noticeable presence. This distribution reflects the varying levels of accessibility, familiarity, and perceived effectiveness of different generative AI technologies among college students.

Table 2. Distribution of Gen AI tools used by college students

Types of Gen AI used by college students	Number(n=833)	Percentage(%)
OpenAI—ChatGPT 4.0	215	25.81%
OpenAI—ChatGPT 3.5	299	35.89%
Ernie Bot	490	58.82%
Kimi	127	15.25%
Doubao (ByteDance's AI bot)	109	13.09%
iFlytek Spark	80	9.6%
Qwen (Alibaba's AI bot)	44	5.28%
Tencent Yuanbao	20	2.4%
Others	57	6.84%

To explore the college students' use of Gen AI in English writing, students were requested to select the level of their agreement on the use of Gen AI based on a 5-point Likert scale. As displayed in

"Table 3", the mean scores of the usages are all above 3, which indicates that students use different strategies when using Gen AI in English writing.

Table 3. Students' use of Gen AI in English writing

Dimension	Items	Mean	SD	t	95% Confidence Interval of the Difference
Usages	I utilize ChatGPT as a search engine to gather materials for writing.	3.271	1.185	6.607*	0.191 ~ 0.352
	I use ChatGPT to comprehend and summarize complex texts for English writing purposes.	3.297	1.164	7.351*	0.217 ~ 0.376
	I use ChatGPT to generate outlines and provide ideas for English writing.	3.132	1.185	3.217*	0.051 ~ 0.213
	I use ChatGPT to help me revise errors in English writing and polish drafts based on its suggestions.	3.354	1.172	8.722*	0.274 ~ 0.434
	I critically evaluate the ChatGPT's feedback for my English writing and question the information it offers.	3.463	1.088	12.291*	0.389 ~ 0.537

a *indicates p<.05, **indicates p<.01, ***indicates p<.001

The data indicate that students employ various strategies for integrating Gen AI into their English writing tasks. Notably, the highest mean score was recorded for the statement, “I critically evaluate ChatGPT’s feedback for my English writing and question the information it provides” (mean = 3.463), highlighting students' tendency to engage in critical analysis of Gen AI responses. A one-sample t-test further confirmed a significant difference in this mean score ($t = 12.291, p < 0.05$).

Additionally, students frequently utilized ChatGPT to revise errors and refine drafts (mean = 3.354, $t = 8.722$), comprehend and summarize complex texts (mean = 3.297, $t = 7.351$), and as a search engine for gathering writing materials. In contrast, employing ChatGPT for generating outlines and ideas received the lowest mean score, albeit still above the average (mean = 3.132). These findings suggest that while students appreciate ChatGPT's capabilities in enhancing drafts and facilitating text comprehension, they rely less on it for originating novel ideas.

To explore students' perspectives further, interviews were conducted with 13 participants.

Representative comments included: “Gen AI can provide more targeted material, and its ability to list arguments and suggest ideas helps us construct our articles comprehensively from multiple perspectives.” “Gen AI surpasses other search engines in aggregating materials, generating ideas, and organizing language, offering superior support for developing arguments and ideas in writing.” According to the comments from participants, college students have come up with multiple strategies facing different types of English writing tasks.

4.2 Students’ Perceptions of Benefits of Using Gen AI in English Writing

In this section, the participants were required to determine the level of their agreement on the benefits of Gen AI in English writing (See “Table 4”). The data show that the mean scores of all the benefit items are above 3, indicating that students express a high level of approval of the benefits of using Gen AI.

Table 4. Benefits of using Gen AI

Dimension	Items	Mean	SD	t	95% Confidence Interval of the Difference
Benefits	Using ChatGPT helps me reduce the time spent on writing tasks.	3.774	0.989	22.600*	0.707 ~ 0.842
	ChatGPT can effectively collect and organize resources and information needed for English writing.	3.812	0.904	25.919*	0.750 ~ 0.873
	ChatGPT provides useful feedback to help me improve English writing drafts.	3.733	0.883	23.972*	0.673 ~ 0.794
	Using ChatGPT for English writing improves the quality of my work (e.g., reducing grammatical errors, increasing lexical variety).	3.462	0.910	14.658*	0.576 ~ 0.689
	ChatGPT provides instant, personalized suggestions that help me enhance my English writing skills.	3.535	0.967	15.988*	0.465 ~ 0.579
	ChatGPT helps me learn new English vocabulary and diverse expressions.	3.633	0.829	22.030*	0.476 ~ 0.594

a *indicates $p < .05$, **indicates $p < .01$, ***indicates $p < .001$

Students expressed strong agreement regarding the advantages of using Gen AI in English writing, with mean scores for all evaluated items exceeding 3.5. The most significant benefit identified was Gen AI’s capacity to effectively collect and organize resources for writing (mean = 3.812, $t = 25.919$), followed closely by its ability to reduce time spent on writing tasks (mean = 3.774, $t = 22.600$). Similarly, students highly valued Gen AI’s

feedback for improving drafts (mean = 3.733, $t = 23.972$) and its role in enhancing English writing skills through personalized suggestions (mean = 3.535, $t = 15.988$). Furthermore, participants acknowledged its contribution to learning new vocabulary and diverse expressions (mean = 3.633, $t = 22.030$). These findings highlight that students perceive Gen AI as a highly effective tool for

improving both the efficiency and quality of their writing.

The interviews provided additional insights into the benefits experienced by students using Gen AI in English writing. Representative comments included: “I think Gen AI can improve the efficiency of writing. It can help analyze and organize structure, summarize materials, and even directly generate an article based on these inputs.” “It quickly helps me check grammar errors, polish the article, and generate more authentic and fluent expressions, saving a significant amount of time.” “With Gen AI, we no longer spend excessive time looking up and correcting mistakes. It prevents us from getting stuck on finding inspiration and solves

most problems directly.” In general, the participants’ comments highly correspond with the results, such as the benefit of accelerating writing and polishing the article. The majority of interviewees expressed their high satisfaction with Gen AI’s performance in English writing.

4.3 Students’ Perceptions of Challenges of Using Gen AI in English Writing

“Table 5” shows the analysis results of students’ perceptions of the challenges of using Gen AI in English writing. All the mean scores of the items in the table are above 3, which means that students had an awareness of the difficulties associated with using Gen AI in English writing.

Table 5. Challenges of Using Gen AI

Dimension	Items	Mean	SD	t	95% Confidence Interval of the Difference
Challenges	ChatGPT-generated content lacks creativity and originality.	3.736	1.012	20.990*	0.400 ~ 0.524
	I am unable to judge the source, quality, and reliability of ChatGPT-generated content.	3.522	0.841	17.931*	0.470 ~ 0.601
	I am concerned that using ChatGPT may lead to issues of plagiarism and academic dishonesty.	3.467	1.012	13.324*	0.667 ~ 0.805
	I am worried about potential copyright issues related to ChatGPT-generated texts.	3.535	0.867	17.826*	0.398 ~ 0.536

a *indicates p<.05, **indicates p<.01, ***indicates p<.001

Despite acknowledging its benefits, students highlighted several challenges associated with using Gen AI in English writing. The most significant concern was the perceived lack of creativity and originality in AI-generated content (mean = 3.736, t = 20.990), suggesting that students often view such outputs as formulaic or uninspired. Concerns regarding plagiarism and academic dishonesty (mean = 3.467, t = 13.324) and difficulties in assessing the quality and reliability of AI-generated content (mean = 3.522, t = 17.931) were also prominent. Additionally, potential copyright issues related to AI-generated texts were identified (mean = 3.535, t = 17.826). These findings indicate that while students appreciate the practical advantages of Gen AI, they remain cautious about its ethical and qualitative implications.

Qualitative data from interviews further illuminate these concerns. Representative remarks include: “Gen AI can be used as an occasional aid and is not recommended for frequent use. I fear developing a dependency on AI, which may lead to

sluggish thinking without it.” “Gen AI’s writing style often misaligns with ours. For example, its word selection can be overly complex, and its expressions rigid, making it less conducive to improving our writing skills.” “Sometimes, Gen AI provides generic answers, and when addressing specific or complex questions, its responses are too vague.” From the remarks above, the interviewees express their challenges of using Gen AI in English writing, such as challenges of overcoming reliance on AI, hardly improving writing skills, and getting specific responses.

5. DISCUSSIONS

5.1 Students’ Multiple Strategies in Using Gen AI

The majority of students reported employing diverse strategies when using Gen AI for English writing. Many used it as a search engine to answer writing-related questions and find source materials [18], emphasizing the need to critically assess AI-

generated content and verify feedback sources. Students also utilized Gen AI to aid in text comprehension and summarization, improving reading efficiency but risking dependency, which may hinder reading skills development. In the outlining stage, tools like ChatGPT were employed to generate ideas and brainstorm keywords, fostering creativity and providing new perspectives [19]. Gen AI can also assist in identifying and correcting writing errors, allowing students to focus more on content rather than on error correction. Spelling and grammar checkers and collaborative writing processors designed to simplify the writing process are popular among students [20]. The error-correction function of Gen AI is particularly valued in the English writing process. Gen AI's error-correction features, such as grammar and spelling checks, were valued for allowing students to focus on content over mechanics. However, students generally adopted a critical stance, questioning AI feedback accuracy, and teachers are encouraged to guide them in evaluating risks like misinformation [20], [21].

Students were also asked, "Have you tried different strategies to maximize the utility of ChatGPT for English writing? For example, use templates or prompts for creation. Please share your specific practices and experiences." Responses highlighted several strategies, such as using AI templates for a structured writing framework to improve efficiency and employing specific prompts to guide Gen AI in producing more precise content. Multi-round interaction was another suggested strategy, allowing users to refine prompt wording progressively to better convey their intent.

5.2 Benefits and Positive Impacts of Students' Use of Gen AI

The findings of this study highlight several significant benefits of using generative AI (Gen AI) for English writing. One of the key advantages reported by students is the reduction in writing time [22], which is particularly valuable when facing tight academic deadlines. Gen AI streamlines various aspects of the writing process, such as idea generation, content drafting, and structural suggestions, allowing students to focus on refining their arguments and enhancing coherence. In addition to improving efficiency, Gen AI contributes to the quality of students' writing. The tool offers personalized, real-time feedback, helping students to identify and correct grammatical errors, improve sentence structure, and

expand their vocabulary. This immediate feedback supports a deeper understanding of English writing conventions and fosters overall writing improvement. Furthermore, Gen AI aids in gathering and organizing large volumes of information, a crucial task for students working on complex writing assignments. By assisting in the organization of content, the tool helps students manage research more efficiently and ensure the relevance and coherence of their work. This process not only enhances writing quality but also supports the development of critical thinking skills.

Survey responses also suggest that Gen AI boosts students' confidence in their writing. The tool's real-time feedback helps reduce writing anxiety, particularly among students with language barriers, by providing constant support and allowing them to express their ideas more freely. Overall, these findings demonstrate that Gen AI has a positive impact on students' academic writing by improving efficiency, quality, and confidence, while also supporting their learning process through effective feedback and content organization.

5.3 Potential Drawbacks and Challenges of Gen AI

Although Gen AI offers many benefits in writing support, some notable drawbacks have been identified. First, AI-generated content often lacks creativity and originality and students tend to rely on these tools, stifling their creative and personalized expression [23]. Second, students face difficulties in assessing the quality and reliability of Gen AI's output, raising risks to content accuracy and credibility. Besides, academic dishonesty is another potential drawback, with some students concerned about plagiarism risks when using Gen AI [19], posing a threat to academic integrity. Copyright issues are also relevant as students may not be clear about the ownership of generated content, which can lead to legal and ethical dilemmas.

Based on students' responses to the question, "Did you encounter other difficulties when using ChatGPT for English writing support?" this study identifies several persistent challenges. These include difficulties in formulating precise instructions for ChatGPT, generating content misaligned with the author's intent, inaccuracies in generated information or limited data sources, and concerns about copyright and plagiarism [24]. This is highly consistent with the results obtained from the data analysis.

Addressing these challenges is urgent. According to current academic research, feasible solutions are still pending. In particular, guidelines and policies from educators and institutions are needed to clarify appropriate uses of AI, especially regarding academic integrity and copyright concerns. Students should be equipped with critical thinking and information literacy skills to evaluate the quality and legitimacy of AI-generated content effectively.

6. CONCLUSION

The purpose of this study was to clarify Chinese university students' perception of the use of Gen AI in English writing. Results revealed how college students apply Gen AI in English writing. In addition to the perceived benefits during use, such as saving writing time, gathering and organizing resources and providing effective feedback, students encountered some challenges, such as concerning academic integrity issues and judging the origin, quality, or reliability of the content.

Therefore, this study recommends several approaches to help students use Gen AI effectively while avoiding academic misconduct. First, students can simplify prompt formulation using templates or precise keywords to guide ChatGPT's output. Additionally, multi-round interactions refine prompts and improve results. Verifying ChatGPT's outputs to ensure accuracy, foster critical thinking, and uphold academic standards is also strongly recommended. Additionally, to ensure the responsible use of Gen AI, further support and professional training are essential. Students should adhere to academic standards when paraphrasing AI-generated content, using it for inspiration rather than copying it verbatim in assignments or papers [19]. Universities should provide additional training on effective instruction [18], multi-round interaction, information verification, and plagiarism avoidance to help students make informed use of generative AI tools in English writing.

Several limitations of this study should be considered when generalizing the findings. First, the sample used in this study was limited in terms of demographic diversity, which may affect the representativeness of the findings. Although the study sampled participants from various universities and disciplines, the distribution of students across different fields of study was uneven. For instance, engineering students made up 64% of the sample, while those in agriculture represented only 0.2%. This imbalance may skew the results, as

students from different disciplines may have varying levels of exposure to and engagement with generative AI in English writing. To address this limitation, future research should seek to expand the demographic scope by including a more balanced representation of participants from a wider range of disciplines and institutions. A more diverse sample would enhance the generalizability of the findings and provide a more comprehensive understanding of how generative AI is used across different academic contexts. Second, the data collected in this study relied heavily on self-reported measures, primarily through questionnaires. While this method provides valuable insights into students' perceptions and experiences with Gen AI, it does not offer an in-depth analysis of the actual texts produced by the students. This reliance on self-reporting may introduce biases, as participants' responses may not fully reflect their actual use of Gen AI in writing tasks. Future research could benefit from incorporating a more detailed textual analysis of the students' writing, examining the quality and characteristics of AI-generated content. By analyzing the specific texts produced with the aid of Gen AI, researchers could gain a more nuanced understanding of the tool's impact on writing quality, coherence, and creativity. This would also allow for a more objective assessment of the actual application of Gen AI in the writing process, complementing the self-reported data. By addressing these limitations, future studies can contribute to a deeper and more comprehensive understanding of Gen AI's role in English writing and its potential for integration across various disciplines and contexts.

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