THE EFFECTS OF CHATGPT ON ACADEMIC WRITING PROFICIENCY AMONG ENGLISH-MAJORED UNDERGRADUATES AT A UNIVERSITY

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Abstract: The increasing integration of artificial intelligence (AI) in education has transformed academic writing instruction, with ChatGPT emerging as a widely used tool among English-majored students. This study explores the effects of ChatGPT on academic writing proficiency, focusing on four key aspects: academic vocabulary, grammar structure, idea development, and student motivation. A quantitative approach was employed, utilizing a questionnaire distributed to undergraduate students at a university in Hanoi. The data were analyzed by SPSS, incorporating reliability testing and exploratory factor analysis. The results indicate that ChatGPT significantly enhances students' academic vocabulary, refines grammatical accuracy, facilitates idea generation, and increases motivation in academic writing. This study contributes to the growing body of research on AI-assisted writing and highlights the need for further investigation into its long-term impact on writing proficiency across diverse academic disciplines.

Keywords: ChatGPT, academic writing, higher education, AI-assisted writing

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TÁC ĐỘNG CỦA CHATGPT ĐỐI VỚI NĂNG LỰC VIẾT HỌC THUẬT CỦA SINH VIÊN CHUYÊN NGÀNH TIẾNG ANH TẠI MỘT TRƯỜNG ĐẠI HỌC

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Tóm tắt: Sự gia tăng của việc tích hợp trí tuệ nhân tạo (AI) trong giáo dục đã chuyển đổi cách giảng dạy viết học thuật, khi mà ChatGPT nổi lên như một công cụ được sử dụng rộng rãi bởi các sinh viên chuyên ngành tiếng Anh. Nghiên cứu này khám phá những tác động của ChatGPT đến trình độ viết học thuật, tập trung vào bốn khía cạnh chính: vốn từ vựng học thuật, cấu trúc ngữ pháp, phát triển ý tưởng và động lực của sinh viên. Nghiên cứu đã sử dụng phương pháp tiếp cận định lượng, với bảng hỏi được cung cấp cho sinh viên tại một trường đại học ở Hà Nội. Dữ liệu được phân tích bằng SPSS, kết hợp thử nghiệm độ tin cậy và phân tích nhân tố khám phá. Kết quả chỉ ra rằng ChatGPT cải thiện đáng kể vốn từ vựng học thuật của sinh viên, tinh chỉnh độ chính xác ngữ pháp, tạo điều kiện cho việc tạo ra ý tưởng và tăng động lực trong bài viết học thuật. Nghiên cứu này đóng góp vào khối lượng nghiên cứu ngày càng tăng về văn viết có sự hỗ trợ của AI và nhấn mạnh nhu cầu khám phá sâu hơn về tác động lâu dài của nó đối với trình độ viết trong các ngành học thuật khác nhau.

Từ khóa: ChatGPT, bài viết học thuật, giáo dục đại học, văn viết có sự hỗ trợ của AI

1. Introduction

In the 21st century, globalization and technological advancements have made English a dominant language in science, business, and higher education. Among the four language skills, writing remains one of the most difficult aspects for English learners as a Foreign Language (EFL) and English as a Second Language (ESL) learners, particularly academic writing, which requires mastering complex structures and conventions (Silvina & Listyani, 2020; Al-Badi, 2015). Currently, the implementation of Artificial Intelligence (AI) in academic writing has gained considerable prominence in recent years. Various AI-driven tools, such as ChatGPT, are increasingly utilized by students, particularly English learners, who frequently rely on them during academic writing activities (Wanda et al., 2024).

ChatGPT is capable of providing intelligent information globally for educators, and support to create new ideas and procedures in teaching and learning. As AI-driven tools continue to shape education, Generative Pre-trained Transformers (GPTs) are expected to revolutionize teaching, learning, and research by fostering innovation and accessibility (P. S. Aithal & S. Aithal, 2023). According to Aithal et al. (2023), ChatGPT has numerous applications on education, including writing support. Given its impact on automated writing evaluation, ChatGPT is anticipated to significantly enhance students' writing proficiency (Mahapatra, 2024).

Despite the growing use of ChatGPT in academic writing, research on AI and ChatGPT in Vietnam remains limited due to resource constraints, lack of awareness, and insufficient institutional support (Truong & Cao, 2023). Notably, there has been limited research on the impact of ChatGPT on academic writing in the context of Vietnam. Therefore, this research

aims to fill this gap by examining ChatGPT's role in academic writing among English-majored undergraduates, providing insights to help educators and students optimize its use.

The study aims to explore students' overall perceptions of ChatGPT as a supportive tool in academic writing. Secondly, it seeks to evaluate the impact of ChatGPT on various aspects of students' academic writing quality, including grammatical structure, academic vocabulary, idea development and student motivation.

The study addressed the following two research questions:

1. What are students' overall perceptions of ChatGPT as a supportive tool in academic writing?

2. To what extent does the use of ChatGPT enhance English-majored students' academic writing proficiency?

For this research paper, the researcher states out the following hypotheses:

1. Students have a generally positive perception of ChatGPT as an effective and supportive tool in academic writing.

2. In academic writing, ChatGPT assists students by enhancing grammatical accuracy, promoting the use of appropriate academic vocabulary, supporting coherent idea development, and boosting student motivation.

2. Literature Review

2.1. Academic Writing

Academic writing has been defined in various ways by scholars. For instance, Tardy (2005) characterizes it as a process of transforming knowledge, where writers must persuade their audience of the significance, reliability, and value of their work. According to Fukao and Fujii (2001), mastering academic writing involves developing multiple essential skills, such as gathering, refining, summarizing, and rephrasing information. Likewise, Abdulkareem (2013, p. 1553) describes academic writing as a structured approach taught in universities, which includes organizing ideas, fostering critical thinking, and enhancing both vocabulary and grammatical proficiency. Smith (2022) shares the same idea when claiming that academic writing is the type of writing that conveys ideas, information, and research results to the scholarly community.

Academic writing has a more formal aspect and standard English is generally used throughout. The characteristics of academic writing include: its structure, evidence, critical perspective, balanced approach, precision, objectivity, and formal tone (Smith, 2022).

2.2. Characteristics of Academic Writing

Oshima and Hogue (2007) state that academic writing in English often differs significantly from that in a learner's native language, not only in terms of vocabulary and grammatical structures but also in the conventions of organizing and presenting ideas (p. 3).

Firstly, academic writing must employ clear and precise language to ensure reader comprehension, while also maintaining objectivity and a formal tone. According to Yakhontova (2015), English academic writing is characterized by a formal style, marked by the use of suitable academic vocabulary and the absence of conversational elements. Similarly, Maamuujav, Olson, and Chung (2021) highlight the importance of using a wide range of academic vocabulary in academic writing, emphasizing that a well-developed and sophisticated

vocabulary plays a vital role in enhancing writing quality. Supporting this, Vande Kopple (1994) argues that academic texts frequently contain a greater proportion of nouns, a lexical feature essential for achieving informational density.

Secondly, Smith (2022) indicates that academic writing should exhibit a clear grammar structure. Supporting this structural emphasis, Biber, Gray, and Poonpon (2011) highlight that academic writing frequently depends on complex phrasal constructions, particularly those involving multiple layers of modification. Such reliance on intricate phrase structures further reflects the dense and carefully organized nature of academic texts, where clarity and precision are achieved not only through overall structure but also through detailed grammatical choices. More importantly, syntactic complexity - particularly through the use of subordination and elaborated noun phrases - has been found to strongly correlate with higher-quality writing (Casal & Lee, 2019).

Thirdly, in academic writing, logical division of ideas of organization helps ensure clarity and coherence by breaking down complex topics into manageable parts (Oshima & Hogue, 2007, p. 78). Likewise, Altakhaineh (2012) claims that the progression of ideas and paragraphing should be coherent and well-supported with relevant examples in academic writing. In fact, many widely used assessment tools, such as the SAT, IELTS, STEP (Lumley, 2002), and the ESL Composition Profile (Jacobs et al., 1981), include organization as a core scoring criterion. This inclusion highlights the widespread consensus among educators and institutions on the value of structured and coherent writing in academic contexts.

The fourth feature of academic writing is critical writing which demands extensive research to enable the writer to obtain a full comprehension of the subject matter, thereby allowing for a truly informed and analytical approach (Smith, 2022). It is also important to have a balanced approach in academic writing. This involves considering all perspectives on the issue and maintaining an unbiased approach. Moreover, in academic writing, opinions and arguments should be substantiated by evidence. The content often relies on insights from experts in the field, making it essential to reference sources accurately. This typically involves using in-text citations and providing a comprehensive reference section.

2.3. AI and ChatGPT in Education

Artificial Intelligence (AI) is commonly defined as the development of computer systems or machines capable of executing tasks that traditionally require human intelligence, including learning, reasoning, and problem-solving (Interaction Design Foundation, 2016). The term was originally first proposed by Stanford professor John McCarthy in 1955, who described AI as the discipline dedicated to building machines with cognitive abilities, essentially machines that can mimic aspects of human cognitive function, such as perception and decision-making. Bellman (1978) contributes to the discourse by defining AI as the automation of cognitive processes, including decision-making, problem-solving, and learning. Moreover, AI chatbots utilize natural language processing models to comprehend and analyze human language, which forms the functionality of AI chatbots, according to Nagarhalli et al. (2020).

In recent years, AI has experienced a resurgence with the debut of ChatGPT in 2022 which is categorized under a class of language models known as Generative Pre-trained Transformers (GPT) (Fui-Hoon Nah et al., 2023). The GPT category is classified as a subset of Large Language Models (LLMs), which leverage deep learning techniques for extensive training on substantial datasets (Cascella et al., 2023). As stated by Dönmez et al. (2023), GPT technology serves as a highly effective tool for tasks related to Natural Language Processing (NLP). Chen et al. (2023)

add to the scholarly discussion by claiming ChatGPT is specifically developed and optimized for conversational purposes, aiming to generate human-like responses by leveraging its extensive knowledge base. Similarly, Dasborough (2024) expresses the same view, stating that ChatGPT is a type of artificial intelligence capable of generating human-like text and creative content, as well as consolidating data from multiple sources for analytical insights.

2.4. Impacts of ChatGPT on Academic Writing

2.4.1. Academic Vocabulary

Shaikh et al. (2023) conduct a quantitative evaluation of ChatGPT's utility and effectiveness in facilitating various English language learning tasks, including conversation, writing, and particularly academic vocabulary acquisition. Their findings highlight ChatGPT's potential to enhance participants' academic vocabulary and improve their written conversational abilities. Similarly, other study's findings of Athanassopoulos et al. (2023), Can and Bardakci (2022) and Kallou and Kikilia (2021) also demonstrate an increase in the total word count, the number of unique words, and the average number of words per sentence in the improved versions of participants' work after utilizing ChatGPT. These findings are consistent with the conclusions of several researchers including Stuart Redman (2017) and Guo et al. (2022). For instance, Guo et al. (2022) incorporate ChatGPT into argumentative writing classes for EFL students at Hong Kong University. They suggest that ChatGPT enhances students' academic and professional vocabulary by providing an interactive and unconventional learning experience.

2.4.2. Grammar Structure

Studies have shown that using AI including ChatGPT enhances overall writing quality while minimizing errors in academic papers. (Andrea, 2023; Almaleki, 2020), especially by automatically correcting grammatical structures (Raad et al., 2023). According to Aryadi et al. (2024), ChatGPT offers grammar correction assistance by analyzing student text input and providing suggestions for improved grammar and sentence structure. This feature is particularly beneficial for students who struggle with mastering grammar rules or identifying errors, enabling them to enhance the accuracy and clarity of their writing. By utilizing this tool, students can refine their language use and elevate the quality of their academic work, placing a stronger emphasis on grammatical precision. Aryadi et al. (2024) also indicate the positive impact on students' achievements in generating focused ideas, establishing stronger connections among ideas and sentences, and enhancing grammatical accuracy, which are also claimed by previous researchers (Allagui, 2023; Kohnke et al., 2023; Su et al., 2023; Wang & Guo, 2023).

2.4.3. Idea Development

As stated by Lingard (2023), ChatGPT serves as a useful tool for idea generation and brainstorming in academic writing. It can assist student writing by offering relevant guidance on content development and structural organization throughout the composition process (Allagui, 2023). Obviously, ChatGPT is an excellent tool for generating ideas across various domains, particularly in academic writing (Aryadi et al., 2024). With its extensive knowledge base and contextual understanding, it provides valuable insights and suggestions that can spark creativity. By engaging in a conversation with ChatGPT, students can tap into its idea-generating capabilities, discovering unique concepts that inspire and propel their projects forward. To be more specific, Aryadi et al. (2024) indicate that students perceive ChatGPT as a useful resource for generating ideas related to their academic writing, guiding them to ignite inspiration that they can later develop into written content. However, what sets ChatGPT apart

from other chatbots is its ability to provide immediate responses, fostering more diverse ideas and dynamic conversations across a wide range of subjects (Haque et al., 2022; Zhai, 2022).

2.4.4. Motivation of Students

In a study conducted in Saudi Arabia, Ali et al. (2023) reveal the positive impact of ChatGPT's use on learners' motivation. To clarify the opinion of Ali et al. (2023), Smith and Johnson (2021) explore the potential of artificial intelligence chatbots as academic writing assistants, examining whether and how AI-powered chatbots could enhance students' sense of competence, interest, and writing ability. The result shows that students who use the chatbot as a writing resource reported increased confidence in their writing skills and greater investment in the writing process. The interactive nature of ChatGPT, coupled with its ability to provide personalized assistance, fostered a positive learning environment that encouraged students to take an active role in their writing. Furthermore, engaging with ChatGPT offers students a unique advantage, sparking inspiration and creativity in their work (Aryadi et al., 2024).

3. Methodology

This study employs a quantitative research approach to analyze the impact of ChatGPT on academic writing among undergraduate English-majored students. According to Creswell (2014), quantitative methods are most suitable for large sample sizes as they allow for statistical analysis, ensuring the reliability and generalizability of findings. The study will be conducted at a national university in Hanoi, which has a longstanding tradition in training English-majored students. The target population includes 310 English-majored undergraduates. This study employs a non-random sampling approach, specifically convenience sampling, to select participants. This method was chosen due to logistical constraints and the accessibility of the target population within the university. Non-random sampling allows the researcher to quickly and efficiently gather data from a large number of participants. According to Dörnyei (2007), convenience sampling, also referred to as haphazard or accidental sampling, is a non-probability method in which individuals are selected based on certain practical factors such as their geographic proximity, ease of access, availability at a particular time, or willingness to participate. Although this approach may not fully capture the diversity of the entire population, it remains a common choice due to its efficiency in accessing target participants.

Data was gathered through a questionnaire, selected for its ability to collect standardized information efficiently from a large number of participants. The questionnaire used in this study consisted of two sections with a total of 28 items. The first section gathered demographic information such as gender, year of study, frequency and purpose of ChatGPT usage. The remaining topic-related sections measured students' perceptions of the impact of ChatGPT on (1) academic vocabulary, (2) grammar structures, (3) idea development, and (4) writing motivation, using a five-point Likert scale developed by Podsen (1997) ranging from 1 (Completely Disagree) to 5 (Completely Agree). The questionnaire items were reviewed and modified based on previously developed instruments from relevant studies in the same field, in order to align with the specific context of the current research. These adapted items were drawn from the works of Sultan et al. (2025), Alkamel and Alwagieh (2024), and Shaikh et al. (2023).

Collected data was analyzed using SPSS software to ensure reliability and precision. The analysis begins with Cronbach's Alpha to test the internal consistency of the questionnaire, followed by Exploratory Factor Analysis (EFA) to validate its constructs and identify underlying factors.

4. Results

4.1. Quality of the Scale

4.1.1. Reliability of the Scale (Cronbach's Alpha Coefficients)

Before conducting further analyses on exploratory factors, the reliability and validity of the scale were assessed. The reliability and validity of the measuring instrument are verified by SPSS Statistics. As can be observed from Table 1, all items possess quite impressive Cronbach's Alpha coefficient value, exceeding 0.80, which demonstrates a very good level of reliability (Peterson, 1994). The corrected item-total correlation values for all indicators exceed 0.30, confirming that each item is strongly associated with the overall scale and meets the required threshold for acceptability (Nunnally, 1978). This suggests that the items effectively measure the intended construct and contribute meaningfully to the internal consistency of the scale. Furthermore, an examination of Cronbach's alpha coefficients reveals that removing almost individual items results in a lower overall coefficient, except for the indicator A6. However, since Cronbach's alpha coefficient of the item is high (more than 0.80), the coefficient of the indicators, if items are deleted, is acceptable. Therefore, it can be claimed that the test is reliable, thus being qualified for further analysis.

Table 1

Test of Reliability

No	Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Academic Vocabulary (A) - 0.94			
1	A1	0.73	0.93
2	A2	0.78	0.93
3	A3	0.74	0.93
4	A4	0.79	0.93
5	A5	0.81	0.93
6	A6	0.58	0.94
7	A7	0.73	0.93
8	A8	0.80	0.93
9	A9	0.85	0.93
10	A10	0.76	0.93
2. Grammar Structure (G) - 0.91			
1	G1	0.82	0.87
2	G2	0.78	0.89

3	G3	0.75	0.90
4	G4	0.82	0.87
3. Idea Development (I) - 0.94			
1	I1	0.80	0.93
2	I2	0.85	0.92
3	I3	0.82	0.93
4	I4	0.85	0.92
5	I5	0.77	0.93
6	I6	0.80	0.93
4. Student Motivation (M) - 0.86			
1	M1	0.69	0.83
2	M2	0.73	0.80
3	M3	0.77	0.79
4	M4	0.63	0.85

4.1.2. Validity of the Scale (Exploratory Factor Analysis)

After confirming that the scales are reliable based on the results of the reliability assessment by Cronbach's alpha, a total of 24 items are utilized for the exploratory factor analysis (EFA). The method of extraction used in this analysis is principal component analysis. The statistics in Table 2 show that the scale acquires adequate internal consistency. The results of assessing scale validity indicates that KMO is 0.90 and Sig. of Bartlett's Test is $0.000 < 0.005$. As the KMO value and the result of Bartlett's Test are qualified, the factor analysis is allowed to proceed (Hair et al., 1998).

As indicated in Table 2, the Eigenvalues of all four explored factors, which represent the total amount of variance that all the components explain, are greater than 1. In addition, the cumulative percentage of justified variance is 73.84%, which means that these four factors can account for 73.84% of the total variance (Anderson & Gerbing, 1988). These indexes indicate that the results of exploratory factor analysis of independent variables in this research are valid. Regarding the rotated component matrix from EFA, 4 factors are generated from 24 items. There are 10 items in Factor 1 named academic vocabulary (A) while Factor 2 known as grammar structure (G) includes 6 items. Factor 3 with 6 different items is called idea development (I) and the last factor is Factor 4, named student motivation (M), which comprises 2 different items. Interestingly, two items of Factor 4 (M1 and M3) in the original questionnaire, after exploratory factor analysis, have been moved to Factor 2. Moreover, M4 and M2 were removed from the questionnaire because a component with only two items is not considered qualified, making it necessary to reject them from further analysis.

Table 2

Results of Exploratory Factor Analysis for Independent Variables

Items	Components			
	1	2	3	4
A9	0.80			
A8	0.74			
A5	0.73			
A1	0.72			
A10	0.68			
A7	0.68			
A4	0.67			
A2	0.62			
A6	0.62			
A3	0.61			
G1		0.82		
G4		0.78		
G2		0.76		
G3		0.70		
M1		0.68		
M3		0.63		
I2			0.74	
I3			0.74	
I1			0.72	
I6			0.70	
I4			0.70	
I5			0.70	
M4				0.74
M2				0.66

Eigenvalues		13.42	1.92	1.29	1.10
Cumulative (%)		55.91%	63.90%	69.27%	73.84%
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.90			
Bartlett's Test of Sphericity	Approx. Chi-Square	2012.21			
	Df	276			
	Sig.	0.000			

4.2. Perception of Student Related to ChatGPT Usage

Figure 1
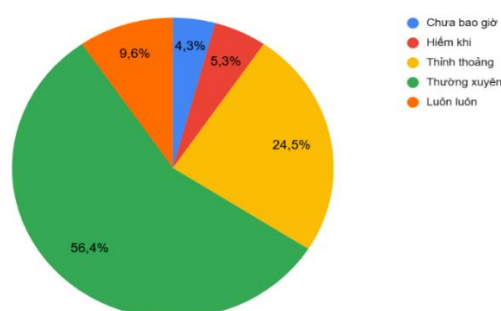
Respondent's Frequency Use ChatGPT

Figure 1 depicts the frequency with which participants utilized ChatGPT in their academic writing. The majority at 56.4% reported using ChatGPT regularly in their academic writing tasks. Meanwhile, 24.5% stated they used it occasionally, indicating that over 80% of the students had integrated this tool into their writing process to varying extents. On the other hand, a smaller proportion showed limited or no engagement with the tool while 5.3% used it rarely, and 4.3% reported that they had never used it. Interestingly, 9.6% of participants claimed they always used ChatGPT for academic writing, reflecting a high level of dependence or preference for AI assistance among a certain group of students. These findings suggest a widespread and frequent adoption of ChatGPT in academic writing among English majors, which may reflect the perceived usefulness and accessibility of the tool in supporting their writing tasks.

Figure 2

Respondent's Purpose to Use ChatGPT
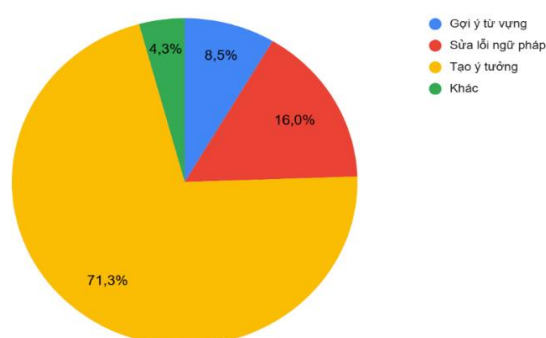
As can be observed from Figure 2, the primary purposes for which students employed ChatGPT in their academic writing was idea generation, with 71.3% of participants selecting this option. This finding suggests that ChatGPT serves as a prominent tool for stimulating students' thinking and supporting the brainstorming phase of their writing process, followed by grammar correction, accounting for 16% of responses. This indicates that many students found ChatGPT beneficial for improving linguistic accuracy. Additionally, 8.5% of the participants reported using ChatGPT mainly for vocabulary suggestion, showing its perceived usefulness in expanding or refining their lexical choices. A relatively small number of students, about 4.3% selected other options such as "I don't use ChatGPT" or "I rely on ChatGPT to complete all my assignments", which indicates that full reliance on the tool is limited to a minority. These results reflect students' tendency to use ChatGPT as a supplementary tool rather than a complete replacement for their academic efforts, particularly in the ideation and drafting stages of writing.

4.3. Descriptive Analysis

The descriptive statistics indicate that students generally perceive the impact of ChatGPT on enhancing their academic vocabulary as positive. The mean scores range from 3.31 to 3.89, suggesting that most participants stick either *neutral* or *agree* with the statements. The highest mean score is observed in item A2 *"ChatGPT helps me discover new academic words that I didn't know before"* with Mean = 3.89, indicating a strong recognition of ChatGPT's role in providing useful academic words. However, item A7 *"ChatGPT helps me remember new academic vocabulary for future writing tasks"* scored the lowest (Mean = 3.31, Standard Deviation = 1.127), highlighting that memorization of new vocabulary through ChatGPT may not be as effective, and learners' experiences in this aspect vary significantly. The standard deviations in this category (ranging from 0.954 to 1.152) reflect a moderate level of variance in students' perceptions.

Table 3

Descriptive Statistics for Academic Vocabulary (A)

No	Variables	Min	Max	Mean	Std. Deviation
1. Academic Vocabulary (A)					
1	A1. I use ChatGPT to suggest academic vocabulary in my writing.	1	5	3.81	0.954
2	A2. ChatGPT helps me discover new academic words that I didn't know before.	1	5	3.89	1.092
3	A3. ChatGPT provides accurate synonyms and word choices.	1	5	3.56	1.001
4	A4. ChatGPT helps me use more diverse and advanced academic vocabulary and avoid repetitive words.	1	5	3.85	1.016
5	A5. ChatGPT helps me distinguish between formal and informal vocabulary.	1	5	3.52	1.152

6	A6. I always double-checked the vocabulary before using it.	1	5	3.82	1.107
7	A7. ChatGPT helps me remember new academic vocabulary for future writing tasks.	1	5	3.31	1.127
8	A8. ChatGPT enhances my ability to select and apply formal academic vocabulary in contextually appropriate situations.	1	5	3.69	0.984
9	A9. I feel more confident in using academic vocabulary after using ChatGPT.	1	5	3.54	1.054
10	A10. My academic vocabulary has increased after using ChatGPT.	1	5	3.53	1.085

The factor receiving high agreement from the respondents with the mean of all items being higher than 3.5 is related to Grammar Structure. Item G1 *"ChatGPT helps me correct grammatical errors in my writing"* received the highest mean (3.74), suggesting that students find ChatGPT particularly useful for grammar correction. In contrast, item G4 *"ChatGPT helps me feel more confident using complex grammar structures"* scored the lowest (3.54), implying some hesitation or lack of confidence when applying advanced grammar structures, even after using ChatGPT.

Table 4

Descriptive Statistics for Grammar Structure (G)

No	Variables	Min	Max	Mean	Std. Deviation
	2. Grammar Structure (G)				
1	G1. ChatGPT helps me correct grammatical errors in my writing.	1	5	3.74	0.972
2	G2. ChatGPT improves my use of complex sentence structures.	1	5	3.65	1.013
3	G3. ChatGPT assists me in avoiding sentence fragments and run-on sentences.	1	5	3.64	1.046
4	G4. I feel more confident using advanced grammar structures in my writing after using ChatGPT.	1	5	3.54	1.064

Regarding Idea Development, the results are notably positive. All mean scores are above 3.60, with the highest being item I3 *"ChatGPT helps me expand my supporting ideas"* and I4 *"ChatGPT provides alternative perspectives on my writing topics that I hadn't considered before"* at 3.87. This consistently high result demonstrates that students find ChatGPT particularly helpful in generating ideas and elaborating on their arguments. Moreover, the standard deviations range from 0.966 to 1.072, suggesting a relatively low dispersion and a strong degree of consensus among the participants about ChatGPT's usefulness in this area.

Table 5

Descriptive Statistics for Idea Development (I)

No	Variables	Min	Max	Mean	Std. Deviation
	3. Idea Development (I)				
1	I1. ChatGPT assists me in organizing my ideas logically.	1	5	3.67	0.966
2	I2. ChatGPT provides useful prompts for developing my arguments.	1	5	3.79	0.971
3	I3. ChatGPT helps me brainstorm supporting ideas for my essays.	1	5	3.87	1.039
4	I4. ChatGPT provides alternative perspectives on my writing topics that I hadn't considered before.	1	5	3.87	0.975
5	I5. ChatGPT encourages me to explore different viewpoints and arguments.	1	5	3.67	1.072
6	I6. ChatGPT improves my ability to connect ideas cohesively in academic writing.	1	5	3.61	1.050

Table 6

Descriptive Statistics for Student Motivation (M)

No	Variables	Min	Max	Mean	Std. Deviation
	4. Student Motivation (M)				
1	M1. ChatGPT reduces my anxiety when writing academic texts.	1	5	3.82	0.961
2	M2. ChatGPT gives me a sense of progress and accomplishment when writing academic tasks.	1	5	3.35	0.991
3	M3. ChatGPT helps me meet deadlines more effectively.	1	5	3.79	0.960
4	M4. ChatGPT encourages me to set higher writing goals.	1	5	3.37	1.107

The findings for student motivation show more variation. While item M1 *"ChatGPT reduces my anxiety when writing academic texts"* received a relatively high mean at 3.82, items M2 and M4 *"ChatGPT inspires me to enjoy writing academic essays more"* and *"ChatGPT motivates me to set higher writing goals"* scored noticeably lower at 3.35 and 3.37, respectively. M2 and M4 are also the two items with the lowest Mean value in the entire questionnaire. These results suggest that ChatGPT may assist students in reducing anxiety, but it may not significantly increase their intrinsic motivation or push them toward more ambitious academic

writing goals. The highest standard deviation in this category is 1.107 (item M4), reflecting diverse opinions among students on ChatGPT's motivational impact.

Overall, participants reported generally positive perceptions of ChatGPT's impact on their academic writing, with most mean scores above 3.5 across all four aspects. The highest mean scores were observed in the Academic Vocabulary factor (up to 3.89), while the Motivation showed the lowest mean (down to 3.35). Standard deviations ranged from 0.954 to 1.152, indicating moderate variation in responses. Notably, the Grammar and Idea Development items showed more variability than Academic Vocabulary items, suggesting slightly more diverse opinions in those areas.

4.4. Summary of the Main Findings

This study explored ChatGPT's impact on their academic writing proficiency through English-major students' perceptions. Through exploratory factor analysis, four distinct yet interrelated components were identified: Academic Vocabulary, Grammar Structure, Idea Development, and Student Motivation. These components partially aligned with the original framework, suggest that learners conceptualize writing proficiency in the same ways. Students generally acknowledged ChatGPT's helpfulness in expanding vocabulary, refining grammatical accuracy, facilitating idea generation, and reducing writing anxiety, although some expressed uncertainty regarding long-term retention and grammatical mastery. The findings also align with prior research in highlighting enhanced learner engagement and even by utilizing ChatGPT students can improve their academic writing proficiency.

5. Discussion

The findings of this study reinforce previous research on the impact of ChatGPT on academic writing. It is observed that ChatGPT positively influences academic vocabulary, grammar structure, idea development, and student motivation. These results align with Doe, Smith, and Johnson (2022), who find that AI-assisted writing tools improve writing quality, efficiency, and overall user satisfaction.

Regarding vocabulary and grammar, Wang and Guo (2023) highlight ChatGPT's role in language learning, confirming its usefulness for vocabulary expansion and grammatical accuracy. The findings also support Dai et al. (2023) and Mizumoto and Eguchi (2023), who demonstrate that AI-driven Automated Writing Evaluation (AWE) tools help refine students' language use. Additionally, Rudolph et al. (2023) report that ChatGPT assists students in improving their grammatical accuracy and structuring complex sentences, which aligns with the results of this study.

For idea development, previous studies have recognized ChatGPT as a valuable brainstorming tool (Allagui, 2023; Lingard, 2023). The present study corroborates this, as students reported that ChatGPT helped them generate ideas and structure their arguments more coherently. Stokel-Walker (2022) also notes ChatGPT's role in simplifying the writing process, which is consistent with the experiences of participants in this study.

Regarding student motivation, the findings align with Ali et al. (2023), who observe that AI tools enhance students' engagement and confidence. The ability to provide immediate assistance and reduce writing anxiety (Su et al., 2023; Kohnke et al., 2023) has been recognized as a key advantage of AI-powered learning tools, a trend also observed in this study. However, while ChatGPT is generally seen as a beneficial tool, some students express concerns about over-reliance on AI, echoing concerns from previous research.

In the Vietnamese context, research on ChatGPT remains scarce. Nguyen (2024) notes that AI tools could provide customized learning support and assist students in academic tasks. This study reinforces these findings, as participants appreciated ChatGPT's ability to provide personalized guidance in academic writing. However, further research is needed to examine the long-term impact of ChatGPT on writing proficiency and critical thinking skills.

6. Conclusion

In conclusion, the impact of ChatGPT on academic writing proficiency among English-majored students is attributed to four key aspects: academic vocabulary, grammar structure, idea development, and student motivation. The findings suggest that ChatGPT enhances students' writing skills by improving vocabulary usage, refining grammatical accuracy, facilitating idea generation, and increasing motivation. This study makes a valuable contribution to the expanding body of scholarly research on AI-assisted writing, but its scope is limited to English-majored students at a university. Future research should explore the long-term effects of ChatGPT on writing proficiency and examine its application across different academic disciplines. Expanding the study to a larger and more diverse sample could provide deeper insights into the role of AI in academic writing education.

References

Abdulkareem, M. (2013). An investigation study of academic writing problems faced by Arab postgraduate students at Universiti Teknologi Malaysia (Utm). *Theory and practice in language studies, 3*(9), 1552-1557.

Al Badi, I. A. H. (2015, January). *Academic writing difficulties of ESL learners*. In *Proceedings of the 2015 WEI International Academic Conference* (tr. 65–78). Barcelona, Spain. https://www.researchgate.net/publication/280696919_ACADEMIC_WRITING_DIFFICULTIES_OF_ESL_LEARNERS

Algrenita Silvina, B., & Listyani. (2020). *Factors contributing to students difficulties in academic writing class: Students perceptions | Budjalemba | Uc Journal: ELT, Linguistics and literature journal*. E-Journal Usd. https://E-Journal.Usd.Ac.Id/Index.Php/Uc/Article/View/2966

Ali, J. K. M., Shamsan, M. A. A., Hezam, T. A., & Mohammed, A. A. Q. (2023). Impact of ChatGPT on learning motivation: Teachers and students' voices. *Journal of English Studies in Arabia Felix, 2*(1), 41–49. https://doi.org/10.56540/jesaf. v2i1.51

Alkamel, M. A. A., & Alwagieh, N. A. S. (2024). Utilizing an adaptable artificial intelligence writing tool (ChatGPT) to enhance academic writing skills among Yemeni university EFL students. *Social Sciences & Humanities Open, 10*, 101095. https://doi.org/10.1016/j.ssaho.2024.101095

Allagui, B. (2023). Chatbot Feedback on students' writing: Typology of comments and efectiveness. In O. Gervasi, B. Murgante, A. M. A. C. Rocha, C. Garau, F. Scorza, Y. Karaca, & C. M. Torre (Eds.), *International conference on computational science and its applications* (pp. 377–384). Springer. https://doi.org/10.1007/978-3-031-37129-5_31

Almaleki, W. S. A. (2020). *Saudi international students' perceptions of the utility of artificial intelligence and intelligent personal assistant tools in EFL learning* (Doctoral dissertation). Concordia University Chicago.

Altakhaineh, A. R. M. (2012). The main characteristics of good academic writing in English, language discourse functions, and challenges that Arab students face. *Asian EFL Journal*, 63, 4–35.

Anderson, J. C., & Gerbing, D. W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological bulletin*, *103*(3), 411-423. https://doi.org/10.1037/0033-2909.103.3.411

Andrea, P (2023). *Use of Electronic Resources in Teaching and Learning EFL in Higher Education.*

Aryadi, A., Heryadi, D., & Nurbatra, L. H. (2024). Exploring the use of ChatGPT in improving students' paragraph composition skills. *Focus on ELT Journal, 6*(4), 205–214. Retrieved from ResearchGate

Athanassopoulos, S., Manoli, P., Gouvi, M., Lavidas, K., & Komis, V. (2023). The use of ChatGPT as a learning tool to improve foreign language writing in a multilingual and multicultural classroom. *Advances in mobile learning educational research, 3*(2), 818-824

Bellman, R. E. (1978). *An introduction to artificial intelligence: Can computers think?* Boyd & Fraser Publishing Company.

Biber, D., Gray, B., & Poonpon, K. (2011). Should we use characteristics of conversation to measure grammatical complexity in L2 writing development? *TESOL Quarterly, 45*(1), 5–35.

Can, Y., & Bardakci, S. (2022). Teachers' opinions on (urgent) distance education activities during the pandemic. *Advances in mobile learning educational research, 2*(2), 351-374.

Casal, J. E., & Lee, J. J. (2019). Syntactic complexity and writing quality in assessed first-year L2 writing. *Journal of Second Language Writing, 44*, 51–62. https://doi.org/10.1016/j.jslw.2019.03.005

Cascella, M., Montomoli, J., Bellini, V., & Bignami, E. (2023). Evaluating the feasibility of chatGPT in healthcare: An analysis of multiple clinical and research scenarios. *Journal ofmedical systems, 47*(1), 1–5. https://doi.org/10.1007/S10916-023-01925-4chan

Chen, L., & Lee, S. (2023). Balancing the use of chat GPT as a writing assistant in higher education. *Journal of Educational Technology, 45*(2), 123-140

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

Dai, W., Lin, J., Jin, F., Li, T., Tsai, Y.-S., Gašević, D. & Chen, G. (2023). *Can large language models provide feedback to student? A case study on ChatGPT.* [Preprint from EdArXiv]. https://doi.org/10.35542/osf.io/hcgzj

Dasborough, M. T. (2024). Ghostwriters in the machine: Openly appreciating AI tools and humans who helped us [Editorial]. *Journal of Organizational Behavior, 45*(2), 155–158. https://doi.org/10.1002/job.2778

Doe, J., Smith, A. B., & Johnson, C. 2022. *The impact of AI language models on evaluation.* https://doi.org/10.48550/arXiv.2304.01746

Dönmez, I., Idil, S., & Gulen, S. (2023). Conducting academic research with the AI interface ChatGPT: Challenges and Opportunities. *Journal of steam education journal of science, technology, engineering, mathematics and art education*. https://Dergipark.Org.Tr/En/Download/Article-File/3003468

Dörnyei, Z. (2007). *Research methods in applied linguistics: Quantitative, qualitative, and mixed methodologies*. Oxford University Press.

Fui-Hoon Nah, F., Zheng, R., Cai, J., Siau, K., & Chen, L. (2023). Generative AI and chatGPT: Applications, challenges, and AI-human collaboration. *Journal of information technology case and application research, 25*(3), 277–304. https://doi.org/10.1080/15228053.2023.2233814

Fukao, A., & Fujii, T. (2001). Investigating difficulties in the academic writing process: interview as a research tool. *ICU language research bulletin, 16*, 29-40

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis with Readings* (5th ed.).

Haque, M. U., Dharmadasa, I., Sworna, Z. T., Rajapakse, R. N., & Ahmad, H. (2022). *"I think this is the most disruptive technology": Exploring sentiments of ChatGPT early adopters using Twitter data*. arXiv. https://doi.org/10.48550/arXiv.2212.05856

Human-Centered Artificial Intelligence. (2020). *Artificial intelligence definitions*. Stanford Hai. https://Hai.Stanford.Edu/Sites/Default/Files/2020-09/Ai-Definitions-Hai.Pdf

Jacobs, H. L., Zingraf, S. A., Wormuth, D. R., Hartfiel, V. F., & Hughey, J. B. (1981). *Testing ESL composition: A practical approach*. Newbury House Publishers.

Kallou, S., & Kikilia, A. (2021). A transformative educational framework in tourism higher educationthrough digital technologies during the COVID-19 pandemic. *Advances in mobile learning educa-tional research, 1*(1), 37-47.

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language learning and teaching. *RELC Journal, 54*(2), 311-320. https://doi.org/10.1177/00336882231162868

Lingard, L. (2023). Writing with ChatGPT: An illustration of its capacity, limitations & implications for academic writers. *Perspectives on Medical Education, 12*(1), 261–270. https://doi.org/10.5334/pme.1072

Lumley, T. (2002). Assessment criteria in a large-scale writing test: What do they really mean to the raters? *Language Testing, 19*(3), 246–276. https://doi.org/10.1191/0265532202lt228oa

Maamuujav, U., Olson, C. B., & Chung. H. (2021). Syntactic and lexical features of adolescent L2 students' academic writing. *Journal of Second Language Writing, 53.* https://doi.org/10.1016/j.jslw.2021.100822.

Mahapatra, S. (2024). *Impact of ChatGPT on ESL students' academic writing skills: a mixed methods intervention study*. Smart Learning Environments. https://slejournal.springeropen.com/counter/pdf/10.1186/s40561-024-00295-9.pdf

McCarthy, J. (2007, November 12). *What is artificial intelligence?* Retrieved from https://www-formal.stanford.edu/jmc/whatisai/

Misbah Sultan, Aleena Taj, Fatima Sabir, Sajid Ali, & Muhammad Obaid Kaleem Qureshi. (2025). The Effect of ChatGPT on the Writing Abilities of Undergraduate English Students. *Journal of Arts and Linguistics Studies*, *3*(1), 67–91. https://doi.org/10.71281/jals.v3i1.210

Mizumoto, A., & Eguchi, M. (2023). Exploring the potential of using an AI language model for automated essay scoring. *Research Methods in Applied Linguistics*. https://doi.org/10.1016/j.rmal.2023.100050

Nagarhalli, T. P., Vaze, V., & Rana, N. K. (2020, March). *A review of current trends in the development of chatbot systems*. In *Proceedings of the 2020 IEEE 6th International Conference on Advanced Computing and Communication Systems (ICACCS)* (pp. 706–710). IEEE. https://doi.org/10.1109/ICACCS48705.2020.9074420

Nguyen, A. M. (2024, June 25). Leveraging ChatGPT for Enhancing English Writing Skills and Critical Thinking in University Freshmen. *Journal of Knowledge Learning and Science Technology, 3*(2), 51-62. https://jklst.org/index.php/home/article/view/168

Nunnally, J. C. (1978). *Psychometric Theory* (2nd ed.). McGraw-Hill.

Oshima, A., & Hogue, A. (2007). *Introduction to academic writing* (3rd ed., p. 3). Pearson Education.

Peterson, R. A. (1994). A meta-analysis of Cronbach's coefficient alpha. *Journal of Consumer Research, 21*(2), 381–391. https://doi.org/10.1086/209405

Raad Raheem, B., Anjum, F., & Ghafar, Z. N. (2023). Exploring the profound impact of artificial intelligence applications (Quillbot, Grammarly and ChatGPT) on English academic writing: A systematic review. *International Journal of Integrative Research, 1*(10), 599–622. https://doi.org/10.59890/ijir.v1i10.366

Redman, S. (2017). *English Vocabulary in Use: Pre-intermediate and Intermediate* (4th ed.). Cambridge University Press.

Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education?. *Journal of applied learning and teaching, 6*(1), 342-363. https://doi.org/10.37074/jalt.2023.6.1.9

Shaikh, S., Yayilgan, S. Y., Klimova, B., & Pikhart, M. (2023). Assessing the usability of ChatGPT for formal English language learning. European journal of investigation in health, *Psychology and Education, 13*(9), 1937-1960.

Silvina, B. A., & Listyani. (2020). Factors contributing to students' difficulties in academic writing class: Students' perceptions. *UC Journal: ELT, Linguistics and literature journal, 1*(2), 99–109. https://e-journal.usd.ac.id/index.php/UC/article/view/2966

Smith, C., & Johnson, D. 2021. Exploring the use of AI chatbots in academic writing support services. International *Journal of Writing Support, 8(*2), 120-138

Smith, S. (2022, July 24). *What is academic writing?* Eap Foundation. https://Www.Eapfoundation.Com/Writing/What/

Stokel-Walker, C. (2022, December 09). AI bot ChatGPT writes smart essays - Should professors worry? *Nature.* https://doi.org/10.1038/d41586-022-04397-7

Su, Y., Lin, Y., & Lai, C. (2023). Collaborating with ChatGPT in argumentative writing classrooms. *Assessing Writing, 57*, 100752. https://doi.org/10.1016/j.asw.2023.100752

Tardy, C. M. (2005). "It's Like A Story": Rhetorical Knowledge Development in Advanced Academic Literacy. *Journal of English for academic purposes, 4*(4), 325- 338

The Interaction Design Foundation. (2016). *What is artificial intelligence (AI)? — Updated 2024*. https://www.interaction-design.org/literature/topics/ai

Truong, H., & Cao, L. (2023). *Exploring the profound impact of artificial intelligence applications (Quillbot, Grammarly, and ChatGPT) on English academic writing: A systematic review*. OSF Preprints. https://doi.org/10.35542/osf.io/sehbq

Vande Kopple, W. J. (1994). Some characteristics and functions of grammatical subjects in scientific discourse. *Written Communication, 11*(4), 534–64.

Wanda, H. H., Setiawan, S., & Munir, A. (2024). What Lies Beneath English Major Students' Attitudes Towards Chatgpt For Academic Writing: A Tam Perspective? Equilibrium: *Jurnal Pendidikan*. https://Journal.Unismuh.Ac.Id/Index.Php/Equilibrium/Article/View/14453/7124

Wang, M., & Guo, W. (2023). The potential impact of ChatGPT on education: Using history as a rearview mirror. *ECNU Review of Education, 8*(1), 41–48. https://doi.org/10.1177/20965311231189826

Yakhontova, T. (2015, July 12). *English academic writing for students and researchers*. Researchgate. https://Www.Researchgate.Net/Publication/279995442_english_academic_writing_for_students_and_researchers

Zhai, X. (2022, December 27). ChatGPT user experience: Implications for education (SSRN Scholarly Paper No. 4312418). *Social Science Research Network.* https://doi.org/10.2139/ssrn.4312418