An Investigation of Students' Perception of the Writing Process Using ChatGPT

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ABSTRACT

The increasing use of generative artificial intelligence (AI), particularly ChatGPT, has transformed academic writing in higher education by supporting idea generation, drafting, revision, and language improvement. However, limited research has examined learners' perceptions of ChatGPT across different stages of the writing process. Therefore, this study investigated learners' perceptions of ChatGPT use, their perceptions of the planning, translating, and reviewing stages of writing, and the relationship between ChatGPT and these stages. This quantitative survey study involved 186 tertiary students selected through convenience sampling. Data were collected using a 43-item five-point Likert scale questionnaire adapted from Raoofi et al. (2017) and Youssef et al. (2024), comprising three sections: demographic profile, writing process, and ChatGPT. The findings revealed that learners generally perceived ChatGPT positively and reported positive perceptions towards all three writing stages. Correlation analysis showed a moderate significant positive relationship between ChatGPT and planning, as well as weak significant positive relationships between ChatGPT and translating and reviewing. The findings suggest that ChatGPT functions as a complementary tool that supports learners throughout the writing process while preserving the importance of cognitive and strategic writing behaviours. The study provides insights for the effective and responsible integration of ChatGPT in higher education writing instruction.

Keywords: ChatGPT, artificial intelligence, writing process, planning, translating, reviewing, tertiary students

INTRODUCTION

Background of Study

In the higher education landscape, one of the most important skills for a student to possess is the writing skills, as students are expected to complete many writing tasks and assignments. There are various types of writing tasks such as essays, article reviews, and reviews that demand students to think critically (Cherry Chan, 2025) and creatively to complete either individually or collaboratively. As the writing tasks in higher education context are significantly more complex and demanding, the writing process and strategies among the students would be different as compared to students in primary or secondary education.

According to Swanenberg (2020), writing is referred to as a communication medium that helps to express concepts, human thinking, and experiences. People mostly write to either inform, persuade, or entertain the readers, using various languages on different platforms. In the writing process, Lo Sardo et al. (2023) stated that scientists specify three specific phases which are planning, translation and transcription, and revision. These three

phases show that the writing process is not easy as it requires many cognitive processes, in order for an individual to produce one good write up. However, in the 21st century, the writing process is made easier with the use of artificial intelligence (AI), specifically with the emergence of Generative AI (GenAI). Through the use of GenAI, writers transfer some of the cognitive process in writing to the GenAI tools (Jin et al., 2025; Yang et al., 2025). Some of the most commonly used GenAI in writing are Gemini, Microsoft Copilot, and ChatGPT.

ChatGPT is one of the popular choices of GenAI among writers, in which it is a natural language processing (NLP) system that is able to carry conversations like humans (Deng & Lin, 2022). It is able to generate responses from the prompts given by users quickly, hence this helps writers to find information and data swiftly before they start writing. Since the use of ChatGPT today is quite rampant among students in tertiary education due to its easy access (Jin et al., 2025), this study finds it necessary to investigate these students' perceptions in using ChatGPT when completing their writing tasks and assignments. By understanding their perspectives, this study could provide insights that could be useful and beneficial for any education stakeholders, especially in ensuring the ethical and effective use of ChatGPT among tertiary students.

Statement of Problem

The rapid proliferation of generative artificial intelligence, particularly ChatGPT, has transformed the landscape of academic writing in higher education. A comprehensive global study involving 23,218 students from 109 countries and territories found that students primarily used ChatGPT for brainstorming, summarising texts, and locating research articles, while a smaller proportion used the tool for professional and creative writing (Ravšelj et al., 2025). The study further reported that students perceived ChatGPT as beneficial for improving access to knowledge, enhancing learning experiences, increasing study efficiency, and supporting the development of AI literacy, digital communication, and content creation skills (Ravšelj et al., 2025). Similarly, Anthony, Sharma, and Sharma (2025) reported that ChatGPT supports multiple stages of the writing process by assisting students in generating ideas and developing outlines during the prewriting stage, improving grammar and vocabulary during drafting, and refining manuscripts during revision. Collectively, these findings demonstrate the growing integration of ChatGPT into students' academic writing practices.

Despite these reported benefits, the use of ChatGPT in education has also raised several concerns. Ravšelj et al. (2025) found that students expressed concerns regarding cheating, plagiarism, and social isolation, and agreed on the need for regulations governing the use of artificial intelligence in education. Likewise, Farazouli et al. (2024) reported that excessive reliance on AI driven communication may contribute to declining writing skills, increasing incidents of plagiarism and cheating, and reduced student focus. Hosseini et al. (2024) further found that students were concerned that the convenience of ChatGPT could lead to a deterioration in deep learning, critical thinking, and creativity, with many expecting to use the tool to complete assignments rather than to support learning. These findings indicate that although ChatGPT offers educational benefits, students also recognise potential risks associated with its use.

The reported benefits and concerns surrounding ChatGPT suggest that students may perceive its role differently throughout the writing process. Levine (2025) reported that students primarily used ChatGPT to generate ideas and develop their arguments during the planning and drafting stages, whereas during the reviewing stage they generally used it in a manner similar to editing tools such as Grammarly. These findings illustrate that students engage with ChatGPT for different purposes across the writing process. However, Martínez-López et al. (2025) argued that research on AI chatbots should include students' feedback to determine whether they perceive the benefits of ChatGPT to outweigh its associated risks. Firdaus et al. (2025) similarly suggested that concerns regarding answer accuracy, AI dependency, and reduced cognitive engagement indicate that ChatGPT should complement rather than replace structured academic guidance. In addition, Latifi and Mazgutova (2025) stated that it remains unclear whether ChatGPT can replace other writing feedback tools and recommended further comparative studies to evaluate its effectiveness across different aspects of writing.

Therefore, this study investigates students' perceptions of ChatGPT throughout the writing process, specifically across the planning, translating, and reviewing stages. By examining students' perceptions at each stage of the cognitive writing process, this study seeks to contribute empirical evidence that may inform the responsible integration of ChatGPT into academic writing instruction.

Objective of the Study and Research Questions

This study is done to explore the influence of ChatGPT on the writing process. Specifically, this study is done to answer the following questions;

- How do writers perceive the use of ChatGPT in the writing process?
- How do learners perceive the planning stage?
- How do learners perceive the translating stage?
- How do learners perceive the reviewing stage?
- Is there a relationship between ChatGPT and all stages in writing?

H_{o1}: There is no relationship between ChatGPT and all stages in writing

LITERATURE REVIEW

Theoretical Framework of the Study

Cognitive Writing Process (Flower and Hayes, 1981)

- **Planning Stage**

The planning stage represents the initial phase of the writing process in which writers establish writing goals, generate ideas, and organise relevant information before producing the first draft. According to Flower and Hayes (1981), planning enables writers to determine the direction and purpose of their writing, allowing ideas to be organised in a coherent and meaningful manner. This stage requires writers to employ metacognitive strategies to regulate their thinking, generate appropriate content, and monitor the development of their writing plans. Raoofi et al. (2017) emphasised that metacognitive strategies play a crucial role in helping learners maintain focus on their writing objectives while evaluating and refining their ideas before drafting begins. Consequently, the planning stage provides a structured foundation that assists writers in managing the cognitive demands of the writing process.

- **Translating Stage**

The translating stage involves transforming planned ideas into written text by converting internal thoughts into coherent language. Flower and Hayes (1981) describe this stage as the process through which writers express conceptual knowledge in the form of sentences and paragraphs. This stage is often challenging because writers must simultaneously generate ideas, organise information, and apply appropriate linguistic knowledge. Rahmat (2020) argued that the ability to translate ideas accurately into written language is essential for ensuring that the intended meaning is effectively communicated to readers. To accomplish this task, writers employ cognitive strategies and effort regulation to sustain concentration while making appropriate lexical, grammatical, and organisational choices. Through the translating stage, abstract ideas are progressively developed into a structured academic text.

- **Reviewing Stage**

The reviewing stage is the final stage of the cognitive writing process, during which writers evaluate and refine their written work to ensure that it effectively achieves its intended purpose. Rather than focusing solely on correcting surface level errors, reviewing is a recursive process that involves reconsidering and refining ideas to improve the overall quality and coherence of the text. According to Raoofi et al. (2017), successful reviewing is supported by social and affective strategies, including seeking feedback from peers and managing emotions such as stress and confidence throughout the revision process. The effective use of these strategies enables writers to refine preliminary drafts into coherent and polished pieces of writing.

- **ChatGPT in Writing**

The advent of generative AI has significantly transformed academic writing practices by providing writers with tools that support idea generation, drafting, revision, and language enhancement. ChatGPT has gained considerable attention due to its ability to generate coherent text, provide instant feedback, and assist writers throughout different stages of the writing process (Khalifa & Albadawy, 2024). According to Mahapatra (2024), ChatGPT can improve writing strategies by helping users brainstorm ideas, organise arguments, and refine sentence structures, thereby enhancing overall writing efficiency and productivity.

Additionally, students frequently use ChatGPT as a tool throughout the writing process, particularly during planning, drafting, translating, revising, and editing, highlighting its growing role in supporting writing development and self-regulated learning (Levine et al., 2025). ChatGPT can assist in brainstorming ideas, narrowing topics, generating outlines, and organising their thoughts before writing. In the drafting stage, it helps writers develop content, elaborate ideas and maintain coherence across paragraphs. Furthermore, ChatGPT is also used to evaluate the clarity and organisation of arguments, identify gaps in reasoning, and receive suggestions for improving content. Through interactive prompts and feedback, ChatGPT helps writers generate relevant ideas, identify appropriate supporting points, and organise their arguments in a coherent manner. At the editing stage, the tool provides support with grammar, vocabulary, sentence structure, and overall language accuracy.

Beyond these practical functions, ChatGPT can also enhance writers' motivation to write by providing immediate assistance and non-judgmental feedback, which may reduce anxiety and fear of making mistakes (Yildiz, 2025). This support can increase writers' confidence, particularly among second language learners who may be hesitant to express their ideas in written form. The interactive nature of ChatGPT encourages learners to ask follow-up questions, explore alternative perspectives, and seek additional information related to their topics (Khampusaen, 2025). As a result, students may become more motivated to conduct further research, deepen their understanding of subject matter, and engage more actively in the writing process. Through these cognitive and motivational supports, ChatGPT promotes greater learner autonomy, self-regulation, and sustained engagement in academic writing (Levine et al., 2025; Mahapatra, 2024).

Past Studies on Academic writing and ChatGPT

Recent studies investigated students' perspectives on the use of ChatGPT in their writing. While students generally view ChatGPT as a beneficial tool to improve the mechanics of their writing, they also express concerns for its limitations in providing authentic writing, handling more complex opinions, and writing effective counter-arguments. Among the benefits of ChatGPT in writing is its ability to improve students' technical aspects of writing and their motivation. For example, Di Sarno-García and Argüelles-Álvarez (2025) conducted a mixed-method study on 101 university students' pre and post expectations of using ChatGPT in their writing assignments in Spain. This study found that there was a slight increase in students' perceptions on improved grammar, vocabulary, and content in their writing. Their motivation also increased when using chatGPT. Similarly, Ljubojević (2024) reported that ChatGPT helped students to organise their essay, write effective introduction and conclusion, as well as improved their grammar accuracy. In addition, Shen (2024) also stated that students who used ChatGPT agreed that it helps them to improve their language quality in their writing.

However, these studies highlighted some limitations on the use of ChatGPT in students' writing. Di Sarno-García and Argüelles-Álvarez (2025) noted that the students were concerned about the authenticity of the ChatGPT responses. This aligns with Ljubojević's (2024) in which the students did not find ChatGPT really useful to express their more personal opinions and write effective counter-arguments. Meanwhile, Shen (2024) found that students had issues with the reliability of ChatGPT, as they realised that sometimes the information and references provided were not accurate and hallucinated by ChatGPT. In this case, students had to be careful and double check the content generated from ChatGPT to ensure no academic dishonesty occurs. In general, these studies pointed out that ChatGPT is useful to improve students' technical writing skills, but it did not prove to be helping the students to express their more personal, complex, and subjective reasoning in a reliable way.

Research on students' perspectives on the use of ChatGPT in their writing yielded various results. In some studies, students had positive views and want to continue using it in the future (Shen, 2024; Mennalla & Quadros-Mennalla, 2024). Shen (2024) found that almost 50% of students in the study felt satisfied with the responses

generated from the ChatGPT, despite having some issues with its reliability. In another study by Mennalla and Quadroes-Mennalla (2024), a majority of the students felt that they should be allowed to use ChatGPT to complete their writing tasks and assignments. Nevertheless, some studies found a neutral view among students about the use of ChatGPT in their writing. This was proven in a study by Krecar et al. (2024), who reported that the mean scores across all aspects of ChatGPT use (risks, usefulness, easy and reliable, use intention and ethical issues) lingered around M= 2.7 to 3.42, on a 5-point Likert Scale. The study stated that students were specifically concerned with the ethical use of ChatGPT. This finding aligns with Abdul Sanny's et al. (2025), who indicated that students were being cautious in using ChatGPT as they were unsure with the reliability and the privacy of their work. To conclude, as students acknowledge its usefulness, they are also aware that there are some drawbacks to using it, hence eliciting the mixed views of the use of ChatGPT in their study. Therefore, there was a need for this study to further investigate tertiary students' perspectives on the use of ChatGPT, specifically focused on the writing process which are] planning, translating, and reviewing.

Conceptual Framework of the Study

Figure 1 shows the conceptual framework of the study. This study explores the influence of ChatGPT on the writing process. According to Flower and Hayes (1981), the writing process involves three main stages: planning, translating, and reviewing. At each stage, writers need to use appropriate writing strategies. Using the right strategies helps writers convey their message in written form (Khairuddin et.al., 2021). According to Raoofi et al. (2017), writers use strategies such as metacognitive, effort regulation, cognitive, social, and affective strategies to write.

At the planning stage, writers depend on strategies such as metacognition to gather their thoughts before they begin writing. The translating stage can be difficult for some writers because it involves other skills, such as paraphrasing (Rahmat, 2020). This stage involves the writer translating their oral thoughts into written thoughts and using strategies such as effort regulation and cognitive help to ease the process. The last stage is the reviewing stage, and some writers depend on the social and affective strategies to get through this stage.

The writing process is now facilitated using ChatGPT. According to Youssef et al. (2024), using ChatGPT in writing influences the writers' critical thinking skills, academic achievement, and engagement. This study investigates whether there is a relationship between ChatGPT and each stage in the writing process.

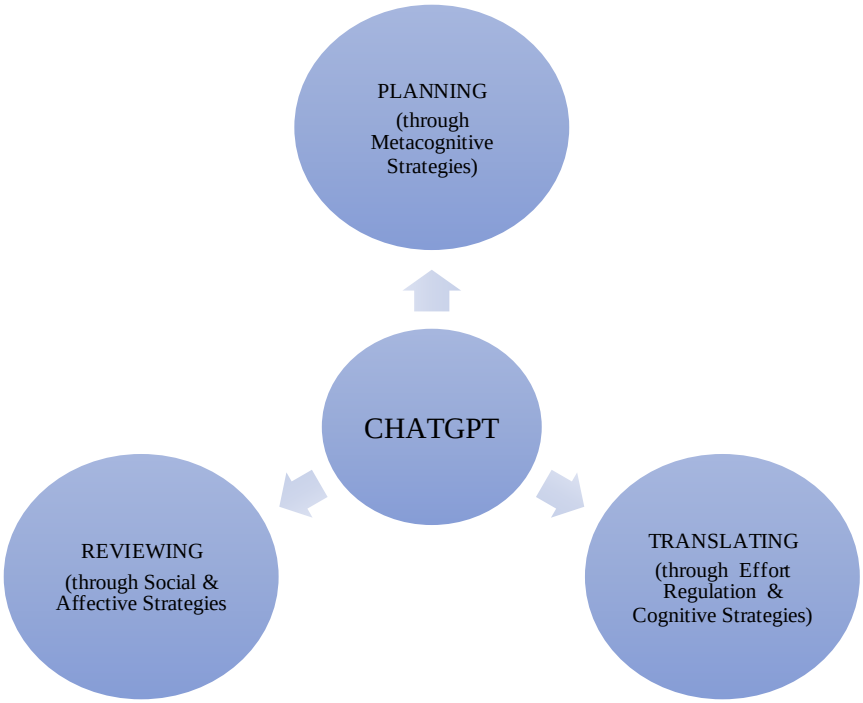

Figure 1- Conceptual Framework of the Study

ChatGPT and Writing

METHODOLOGY

This quantitative study is done to explore ChatGPT and each stage in the writing process. A convenient sample of 186 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Raoofi et. al (2017) and Youssef et. al (2024) to reveal the variables in Table 3 below. Table 1 below shows the categories used for the Likert scale; 1 is for Never, 2 is for Rarely, 3 is for Sometimes, 4 is for Very Often and 5 is for Always.

Table 1- Likert Scale Use

1	Never
2	Rarely
3	Sometimes
4	Very often
5	Always

Table 2- Distribution of Items in the Survey

SECTION	VARIABLE	CONSTRUCT	NO OF ITEMS	ITEMS	CRONBACH ALPHA
B	PLANNING	Metacognitive	10	10	.903
	TRANSLATING	Effort Regulation	4	10	.885
		Cognitive	6		
	REVIEWING	Social	4	7	.826
		Affective	3		
C	CHAT GPT	Critical thinking abilities	4	16	.921
		Academic achievement	4		
		ChatGPT usage	5		
		Student engagement	3		
				43	.938

Table 2 shows the distribution of items in the survey. Section B has 27 items on Writing. Section C has 16 items on ChatGPT.

Table 3- Reliability Levels, Cronbach's Alpha Ranges, and Their Interpretations

Reliability Level	Cronbach's Alpha range	Interpretation
Excellent	0.9 and above	Indicates very high internal consistency
Good	0.80-0.89	Reflects strong internal consistency
Acceptable	0.70-0.79	Indicates acceptable internal consistency
Questionable	0.60-0.69	Reflects questionable internal consistency
Poor	Below 0.6	Indicates poor internal consistency

In order to determine the internal reliability of the instrument, reliability analysis is conducted. Table 3 above shows the distribution and interpretation of Cronbach Alpha range. According to Ahmad et al. (2024), Cronbach Alpha scores between 0.7 to 0.9 is considered acceptable to excellent.

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		Student engagement	3		
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Table 2 also shows the reliability of the survey. The analysis shows a Cronbach alpha of .903 for Planning, .885 for Translating, .826 for Reviewing, and .921 for ChatGPT. The Overall Cronbach alpha for all 43 items in .938; thus, revealing a good reliability of the instrument used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

FINDINGS

Demographic Analysis

According to Ziegenfuss, et.al (2021), researchers report demographic data in percentages to establish sample representatives, and allow for generalizability to a larger population. The reporting also provides an overview of participants' characteristics. Percentages offer a clear and understandable picture of the sample makeup.

Table 4- Percentage for Demographic Profile

Question	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	25%
		Female	75%
2	Cluster	Science & Technology	44%
		Social Sciences & Humanities	56%

Table 4 presents the demographic breakdown of the 186 participants involved in this study. The data reveals that the sample is predominantly female, accounting for 75% of the respondents, while males make up the remaining 25%. In terms of academic background, the distribution is more even, though there is a higher representation from the Social Sciences & Humanities cluster at 56%, compared to 44% from Science & Technology. As noted by Ziegenfuss et al. (2021), documenting these characteristics is essential for establishing a clear profile of the sample, which in turn allows for a more meaningful interpretation and generalization of the research findings.

Descriptive Statistics

Descriptive statistics comprising the mean (M) and standard deviation (SD) were used to summarise the data. According to Vetter (2017), M represents the average, or centre of a data set. SD indicates the typical distance of individual observations from the mean which shows the data's variability or spread. A low SD means the data points are clustered close to the mean whole a high. SD indicates they are more spread out. It is good to have a high SD.

Findings for ChatGPT

This section presents data to answer the research question 3: How do writers perceive the use of ChatGPT in the writing process? In the context of this study, this is measured by (i) critical thinking abilities, (ii) academic achievements, (iii) ChatGPT usage, and (iv) student engagement.

(i) Table 7- Mean (M) and Standard Deviation (SD) for Critical Thinking Abilities (CT)

ITEM	M	SD
CTQ1 I usually need clarification on the precision and reliability of information provided by ChatGPT, which enhances my critical thinking skills.	3.67	0.97
CTQ2 ChatGPT's responses made me doubt their validity, leading me to seek further clarification or evidence.	3.81	0.93

CTQ3 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.	3.96	0.83
CTQ4I need clarification about the accuracy of ChatGPT's output, which often encourages me to evaluate the information and conduct additional research independently.	3.95	0.90

Table 7 presents the findings on the respondents' perceptions on the use of ChatGPT towards the writing process that involves Critical Thinking Abilities (CT). Overall, respondents demonstrated positive perceptions of ChatGPT's role in supporting critical thinking. The highest-rated item was CTQ3 (M = 3.96, SD = 0.83), indicating that respondents actively explored alternative viewpoints and additional sources of information when using ChatGPT to gain a more comprehensive understanding of a topic. This suggests that ChatGPT encouraged learners to verify information and engage in deeper analysis rather than relying solely on AI-generated responses. In contrast, CTQ1 recorded the lowest mean score (M = 3.67, SD = 0.97), indicating that respondents generally agreed that evaluating the precision and reliability of ChatGPT-generated information contributed to the development of their critical thinking skills.

(ii) Table 8 - Mean (M) and Standard Deviation (SD) for Academic Achievement (AA)

ITEM	M	SD
AAQ1 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.	3.89	0.89
AAQ2 ChatGPT brings innovative ideas that are ready to be shared with students.	3.69	0.90
AAQ3 Students can anticipate robust writing guidance from ChatGPT.	3.46	0.92
AAQ4 ChatGPT has improved my academic performance.	3.95	0.94

Table 8 presents the findings for the Academic Achievements (AA) construct. Overall, the findings indicate that respondents held positive perceptions towards the contribution of ChatGPT to their academic achievements, with mean scores ranging from 3.46 to 3.95. Among the four items, AAQ4 recorded the highest mean score (*M = 3.95, SD = 0.94*), suggesting that respondents generally agreed that ChatGPT positively influenced their academic performance, followed by AAQ1 with a mean score of 3.89 (*SD = 0.89*), indicating that respondents perceived ChatGPT as a useful tool for broadening their understanding through the exploration of diverse perspectives. AAQ3 recorded the lowest mean score (*M = 3.46, SD = 0.92*), although respondents still expressed a generally positive perception of ChatGPT's role in providing writing support.

(iii) Table 9- Mean (M) and Standard Deviation (SD) for ChatGPT Usage (CU)

ITEM	M	SD
CUQ1 ChatGPT is a state-of-the-art writing model that is favorably used today.	3.67	0.94
CUQ2 Students seek help from ChatGPT's assistance in composing essays and articles.	3.77	0.86
CUQ3 ChatGPT helps students in English language translation.	3.86	0.90
CUQ4 Employing ChatGPT significantly improves human productivity.	3.41	1.03
CUQ5 The advent of ChatGPT marks a groundbreaking transformation in Natural Language Processing capabilities.	3.55	0.92

Table 9 presents the findings for the ChatGPT Usage (CU) construct.

Table 9 presents the findings for the ChatGPT Usage (CU) construct. Overall, the mean scores ranged from 3.41 to 3.86, indicating positive perceptions towards the use of ChatGPT in writing-related activities. CUQ3 recorded the highest mean score (M = 3.86, SD = 0.90), suggesting that respondents perceived ChatGPT as particularly useful for English language translation, followed by CUQ2 (M = 3.77, SD = 0.86), which indicates that respondents frequently used ChatGPT when composing essays and articles. In contrast, CUQ4 recorded the lowest mean score (M = 3.41, SD = 1.03), although respondents generally agreed that ChatGPT improves productivity. Overall, the findings suggest that respondents viewed ChatGPT as a useful tool for supporting writing activities.

(iv) Table 10- Mean (M) and Standard Deviation (SD) for Student Engagement (SE)

ITEM	M	SD
SEQ1 ChatGPT is more interactive, human-like, and engaging for the students.	3.39	1.01
SEQ2 ChatGPT increases confidence in my ability to conduct research/to search for materials	3.53	0.98
SEQ3 ChatGPT is easy to use and more engaging for me	3.74	0.94

Table 10 presents the findings for the Student Engagement (SE) construct. Overall, the mean scores ranged from 3.39 to 3.74, indicating moderately positive perceptions towards the role of ChatGPT in enhancing engagement. SEQ3 recorded the highest mean score (M = 3.74, SD = 0.94), suggesting that respondents found ChatGPT easy to use and engaging. Meanwhile, SEQ1 recorded the lowest mean score (M = 3.39, SD = 1.01), although respondents still expressed moderate agreement that ChatGPT was interactive and engaging. Overall, the findings suggest that ChatGPT contributes positively to learner engagement during academic writing activities.

Findings for Planning Stage

This section presents data to answer the research question 4: How do learners perceive the planning stage? In the context of this study, this is measured by metacognitive strategies.

(i) Table 11- Mean (M) and Standard Deviation (SD) for METACOGNITIVE (MWS)

ITEM	M	SD
MWSQ 1 I organize my ideas prior to writing.	3.98	0.81
MWSQ 2 I revise my writing to make sure that it includes everything I want to discuss in my writing.	4.13	0.70
MWSQ 3 I check my spelling.	4.17	0.85
MWSQ 4 I check my writing to make sure it is grammatically correct.	4.14	0.80
MWSQ 5 I evaluate and re-evaluate the ideas in my essay.	4.01	0.81
MWSQ 6 I monitor and evaluate my progress in writing.	3.91	0.81
MWSQ 7 I revise and edit an essay two or more times before I hand it in to my teacher.	3.87	0.93
MWSQ8 I go through the planning stages in my writing.	3.90	0.84
MWSQ9 I go through the drafting stages in my writing.	4.01	0.85
MWSQ10 I go through the revising and editing stages in my writing.	3.98	0.78

Table 11 presents the descriptive statistics for the Metacognitive Writing Strategies (MWS) subscale. Overall, students reported consistently high levels of metacognitive engagement across all ten items, with mean scores ranging from 3.87 to 4.17 on a five-point scale. The highest-rated item was MWSQ3 (*M* = 4.17, *SD* = 0.85), indicating that students most frequently engaged in checking their spelling during the writing process, followed closely by MWSQ4 (*M* = 4.14, *SD* = 0.80), which reflected students' tendency to review their writing for grammatical correctness, and MWSQ2 (*M* = 4.13, *SD* = 0.70), which indicated that students revise their writing to ensure completeness of content. The lowest-rated item was MWSQ7 (*M* = 3.87, *SD* = 0.93), which addressed whether students revise and edit their essays two or more times before submission, though this score still reflects a moderately high level of engagement.

Findings for the Translating Stage

This section presents data to answer the research question 5: How do learners perceive the translating stage? In the context of this study, this is measured by (i) effort regulation and (ii) cognitive strategies.

(ii) Table 12- Mean (M) and Standard Deviation (SD) for

EFFORT REGULATION (ERS)

ITEM	M	SD
ERSQ 1I write a lot to develop my writing skills.	3.34	0.88
ERSQ 2I often work hard to do well in my writing even if I don’t like English writing tasks.	3.78	0.87

ERSQ 3Even if the writing activities are difficult, I don't give up but try to engage in them.	4.00	0.86
ERSQ 4I concentrate as hard as I can when doing a writing task.	4.10	0.73

The findings for effort regulation indicate that the respondents demonstrated a high level of persistence and concentration during writing tasks. The highest mean score was recorded for the item indicating that students concentrated hard when writing (M = 4.10, SD = 0.73). Respondents also reported that they continued working and remained engaged even when writing tasks were difficult (M = 4.00, SD = 0.86). In contrast, writing extensively to improve writing skills recorded the lowest mean score (M = 3.34), suggesting that this was the least frequently practised behaviour among the respondents. Overall, the findings indicate that while students demonstrated strong concentration and perseverance during writing tasks, they were less likely to engage in writing frequently for the purpose of developing their writing skills.

(i) Table 13- Mean (M) and Standard Deviation (SD) for COGNITIVE (CWS)

ITEM	M	SD
CWSQ1 I use memorized grammatical elements such as singular and plural forms, verb tenses, prefixes and suffixes, etc, in my writing	3.85	0.91
CWSQ 2I put newly memorized vocabulary in my sentences.	3.73	0.90
CWSQ 3In order to generate ideas for my writing, I usually engage myself in brainstorming.	3.95	0.85
CWSQ 4I use different words that have the same meaning.	3.89	0.93
CWSQ 5I use my experiences and knowledge in my writing.	4.16	0.78
CWSQ 6I try to use effective linking words to ensure clear and logical relationship between sentences or paragraphs	4.10	0.76

The findings for cognitive strategies indicate that respondents primarily relied on their existing knowledge and experiences during the writing process. The highest mean score was recorded for the item indicating that students used their experiences and knowledge when writing (M = 4.16, SD = 0.78). Respondents also frequently reported using linking words to maintain coherence between sentences and paragraphs (M = 4.10, SD = 0.76). In contrast, using newly memorised vocabulary recorded the lowest mean score (M = 3.73), indicating that it was the least frequently adopted cognitive strategy. Overall, the findings suggest that students primarily relied on their prior knowledge and experiences while employing strategies that supported the organisation and coherence of their writing.

Findings for Reviewing Stage

This section presents data to answer the research question 6: How do learners perceive the reviewing stage? In the context of this study, this is measured by (i) social and (ii) affective strategies.

(i) Table 14- Mean (M) and Standard Deviation (SD) for SOCIAL (SWS)

ITEM	M	SD
SWSQ1 In order to generate ideas for my writing, I usually discuss the writing topic with a friend or classmate.	3.76	0.99
SWSQ 2After revising and editing my essay thoroughly, I ask a friend or my classmate to read and comment on it.	3.49	1.05
SWSQ 3I try to identify friends or classmates whom I can ask for help in my writing.	3.73	1.00
SWSQ 4 When I have trouble writing my essay, I try to do it with my classmates or friends.	3.67	1.02

Table 14 presents the findings for the Social Strategies (SWS) construct during the reviewing stage. Overall, the mean score for all items ranged from 3.49 to 3.76, indicating that respondents generally employed social strategies when reviewing their writing. SWSQ1 recorded the highest mean score (*M = 3.76, SD = 0.99*), suggesting that respondents frequently engaged in discussions with peers to develop ideas for their writing, followed by SWSQ3 with a mean score of 3.73 (*SD = 1.00*), indicating that respondents actively sought support from their peers during the writing process. In contrast, SWSQ2 recorded the lowest mean score (*M = 3.49, SD = 1.05*), although the result still reflects a moderate level of agreement regarding the practice of seeking peer feedback after revision.

(ii) Table 15- Mean (M) and Standard Deviation (SD) for AFFECTIVE (AWS)

ITEM	M	SD
AWSQ1I try to write an essay in class with confidence and ease	3.83	0.76
AWSQ2I try to relax whenever I feel afraid of writing.	3.91	0.86
AWSQ3I encourage myself to write even when I am afraid of making mistakes	4.17	0.75

Table 15 presents the findings for the Affective Strategies (AWS) construct during the reviewing stage. Overall, the results indicate that respondents demonstrated positive affective strategies when engaging in writing activities, with mean scores ranging from 3.83 to 4.17. AWSQ3 recorded the highest mean score (*M = 4.17, SD = 0.75*), indicating that respondents were highly motivated to persevere in their writing despite concerns about making mistakes. This suggests that respondents frequently employed self-encouragement as an affective strategy to overcome apprehension and maintain engagement in writing activities. AWSQ2 also showed a high mean score (*M = 3.91, SD = 0.86*), indicating that respondents generally employed emotional regulation strategies to manage anxiety associated with writing tasks. AWSQ1 obtained a mean score of 3.83 (*SD = 0.76*), suggesting that respondents generally felt confident and comfortable when completing writing activities in class.

Exploratory Statistics (correlation)

According to He (2024), correlation is a statistical technique that shows how strongly two variables are related to each other or the degree of association between the two. It is a common tool for describing simple relationships without making a statement about cause and effect. This section presents data to answer the research question on correlation.

According to He (2024), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0.

Findings for the Relationship between ChatGPT and all stages in writing

This section presents data to answer the research question 6: Is there a relationship between ChatGPT and all stages in writing?

H_{o1}: There is no relationship between ChatGPT and all stages in writing

To determine if there is a significant association in the mean scores between ChatGPT and all stages in writing data is analysed using SPSS for correlations. Results are presented separately in table 16 below.

Table 16- Correlation between ChatGPT and all stages in writing

		Planning	Translating	Reviewing
ChatGPT	Pearson (Correlation	.332**	.264**	.286**
	Sig (2-tailed)	<.001	<.001	<.001
	N	186	186	186

**Correlation is significant at the 0.01 level (2-tailed)

Table 16 shows there is an association between ChatGPT and all stages in writing. In the context of this study, writing stages refer to planning, translating and reviewing stages. Correlation analysis shows that there is a moderate significant association between ChatGPT and Planning (r=.332**) and (p=<.001). There is a weak significant association between ChatGPT and Translating (r=.264**) and (p=<.001); as well as weak significant association between ChatGPT and Reviewing (r=.286**) and (p=<.001). The null hypothesis is rejected for H_{o3}.

CONCLUSION

Summary of Findings and Discussions

This study examined learners' perceptions of ChatGPT use and the stages of the writing process, namely planning, translating, and reviewing, as well as the relationship between ChatGPT use and these writing stages. The findings indicate that respondents generally perceived ChatGPT positively in the writing process. Respondents agreed that ChatGPT supported their critical thinking by encouraging them to explore alternative viewpoints and additional sources of information. They also perceived ChatGPT as contributing positively to their academic performance and regarded it as useful for English language translation, essay writing, and improving productivity. Furthermore, respondents found ChatGPT easy to use and engaging, suggesting that it was generally well accepted as a writing support tool. This finding is consistent with previous studies, which reported that students viewed ChatGPT as a beneficial tool to improve the mechanics of their writing (Di Sarno-García & Argüelles-Álvarez, 2025; Ljubojević, 2024; Shen, 2024). Similarly, students expressed positive views towards ChatGPT and indicated their willingness to continue using it in the future (Shen, 2024; Mennalla & Quadros-Mennalla, 2024).

The findings also demonstrated positive perceptions towards all three stages of the writing process. During the planning stage, learners frequently checked spelling, grammar, and content completeness, which is consistent with Levine et al. (2025), in which students used ChatGPT to generate ideas and develop their own arguments, and Mahapatra (2024), who highlighted ChatGPT as a formative feedback tool that provided immediate feedback and supported academic writing. During the translating stage, learners relied on their prior knowledge and experiences while maintaining concentration throughout writing tasks, which aligns with Khalifa and Albadawy (2024), who identified idea generation, content development, and content structuring as key functions of AI in academic writing. During the reviewing stage, learners demonstrated perseverance despite concerns about making mistakes and actively sought support through discussion and idea sharing, which is consistent with Yıldız (2025), who reported reduced writing anxiety, increased motivation, and increased confidence, and Khampusaen (2025), who highlighted improvements in critical thinking, argument construction, evidence integration, academic voice, and academic integrity.

The findings further revealed significant positive relationships between students' perceptions of ChatGPT and the planning, translating, and reviewing stages of the writing process. These findings suggest that students who perceived ChatGPT more positively also tended to engage more actively throughout the writing process. Although significant relationships were observed across all three stages, the correlation coefficient was highest for the planning stage. This may be because planning closely aligns with ChatGPT's primary functions, particularly generating ideas, organising content, and developing initial arguments before drafting begins (Levine et al., 2025; Khalifa & Albadawy, 2024). In contrast, translating and reviewing require learners to exercise greater linguistic, cognitive, and metacognitive judgement when developing, refining, and evaluating their writing (Flower & Hayes, 1981). Although ChatGPT also supports these stages through feedback and writing assistance (Mahapatra, 2024; Yıldız, 2025), they rely more heavily on learners' own ability to construct arguments, evaluate evidence, and maintain academic integrity (Khampusaen, 2025). This may explain why the planning stage demonstrated the highest correlation with ChatGPT, while comparatively weaker relationships were observed for the translating and reviewing stages.

Overall, the study highlights the potential of ChatGPT to support specific aspects of the writing process while reinforcing the continued importance of learners' own strategic engagement in planning, translating, and reviewing their work. The findings contribute to the growing body of literature on artificial intelligence in language learning and suggest that ChatGPT can be integrated into writing instruction as a complementary resource that enhances learners' writing experiences and supports their writing development.

Implications and Suggestions for Future Research

Theoretical and Conceptual Implications

The findings provide support for the Cognitive Process Theory of Writing proposed by Flower and Hayes (1981), which conceptualises writing as a recursive process involving planning, translating, and reviewing. Learners

reported positive perceptions towards all three stages, suggesting that these cognitive processes remain central to writing even in technology-mediated environments. The findings indicate that learners actively engaged in planning activities such as monitoring grammar, spelling, and content, translating activities involving concentration and the use of prior knowledge, and reviewing activities that required self-regulation and interaction with others. These findings reinforce Flower and Hayes' (1981) proposition that writing involves multiple interconnected cognitive processes that work together to support the production of written texts.

The findings also support Raoofi et al.'s (2017) framework of writing strategies. The positive perceptions towards the writing stages suggest that learners employed a range of metacognitive, cognitive, effort regulation, social, and affective strategies throughout the writing process. Monitoring language accuracy reflects metacognitive strategy use, maintaining concentration demonstrates effort regulation, while seeking ideas from peers and encouraging oneself despite fear of mistakes reflect social and affective strategies. The findings therefore suggest that successful writing continues to depend on learners' ability to strategically manage cognitive, behavioural, and emotional demands throughout the writing process.

From a conceptual perspective, the findings provide empirical support for the proposed framework linking ChatGPT to the stages of writing. Significant relationships were found between ChatGPT use and the translating and reviewing stages, indicating that ChatGPT may support learners in generating ideas, developing content, refining language, and revising written work. However, the weak strength of these relationships suggests that ChatGPT functions as a complementary rather than substitutive tool. While ChatGPT can facilitate certain writing activities, learners continue to rely on their own writing strategies and cognitive processes to plan, construct, and review their texts. Therefore, the study extends the conceptual framework by demonstrating that the integration of AI tools into writing does not diminish the role of human cognition but instead supplements existing strategic writing behaviours.

Pedagogical Implications

The findings suggest that ChatGPT can be incorporated into writing instruction as a supplementary learning tool. Learners reported positive perceptions towards ChatGPT and demonstrated positive perceptions towards the planning, translating, and reviewing stages of writing. Significant relationships were also found between ChatGPT use and the translating and reviewing stages. These findings indicate that ChatGPT may support learners in generating ideas, developing content, refining language, and revising written work. Therefore, educators may consider integrating ChatGPT into writing activities such as brainstorming, drafting, editing, and revision while ensuring that learners remain actively engaged in the writing process. This supports the view that AI should complement rather than replace writing instruction (Hossain & Younus, 2025).

The findings also highlight the need to develop learners' ability to evaluate AI-generated content critically. Although ChatGPT may assist learners during writing, the weak relationships found in this study suggest that successful writing continues to depend on learners' own cognitive and strategic abilities. Educators should therefore guide learners in verifying information, evaluating suggestions, and making informed decisions about the content generated by AI tools. Rather than accepting AI-generated responses uncritically, learners should be encouraged to use ChatGPT as a source of support while maintaining ownership of their writing. This is consistent with Hossain and Younus' (2025) recommendation that learners should critically evaluate feedback generated by ChatGPT.

The findings further suggest the need for professional development and clear guidelines on the pedagogical use of AI in writing classrooms. As ChatGPT becomes increasingly accessible, educators need sufficient knowledge and skills to integrate AI effectively and ethically into writing instruction. Training programmes may focus on strategies for incorporating AI-assisted feedback, promoting responsible use of AI tools, and designing learning activities that strengthen rather than replace learners' writing abilities. Such initiatives may help ensure that technology supports pedagogical goals while preserving the central role of learners in the writing process (Hossain & Younus, 2025; Xu, 2025).

Suggestions for Future Research

The findings revealed significant relationships between ChatGPT and the planning, translating, and reviewing stages of the writing process. Future studies may further examine each writing stage separately to provide a deeper

understanding of how ChatGPT influences specific writing activities. Such investigations may offer greater insight into the distinct role of ChatGPT at each stage of the writing process and provide a more comprehensive understanding of its contribution to academic writing.

The present study focused on learners' perceptions and the relationship between ChatGPT and the writing process. Future research may extend this scope by examining variables such as writing self-efficacy, writing anxiety, motivation, learner autonomy, and AI literacy. Examining these variables may provide deeper insight into the factors that shape learners' engagement with AI-assisted writing and the ways they use ChatGPT during writing tasks.

As this study employed a quantitative survey design, future studies may adopt qualitative or mixed-method approaches to explore learners' experiences with ChatGPT in greater depth. Interviews, observations, and reflective journals may reveal how learners use ChatGPT during planning, translating, and reviewing. These approaches may also provide richer insights into learners' decision-making processes and strategy use throughout the writing process.

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APPENDIX

WRITING STRATEGIES & CHAT GPT

(This instrument is adaped from Raoofi,et.al ,2017 & Youssef,et.al ,2024)

SECTION	VARIABLE	CONSTRUCT	NO OF ITEMS	ITEMS
B	PLANNING STAGE	Metacognitive	10	28
	TRANSLATING STAGE	Effort Regulation	5	
		Cognitive	6	
	REVIEWING STAGE	Social	4	
		Affective	3	
C	CHAT GPT	Critical thinking abilities	4	16
		Academic achievement	4	
		ChatGPT usage	5	
		Student engagement	3	
				44

SECTION B-WRITING STRATEGIES

(ii) MTEACOGNITIVE (MWS)

ITEM	1	2	3	4	5
MWSQ 1 I organize my ideas prior to writing.					
MWSQ 2 I revise my writing to make sure that it includes everything I want to discuss in my writing.					
MWSQ 3 I check my spelling.					
MWSQ 4 I check my writing to make sure it is grammatically correct.					
MWSQ 5 I evaluate and re-evaluate the ideas in my essay.					
MWSQ 6 I monitor and evaluate my progress in writing.					
MWSQ 7 I revise and edit an essay two or more times before I hand it in to my teacher.					
MWSQ8 I go through the planning stages in my writing.					
MWSQ9 I go through the drafting stages in my writing.					
MWSQ10 I go through the revising and editing stages in my writing.					

(iii) EFFORT REGULATION (ERS)

ITEM	1	2	3	4	5
ERSQ 1I write a lot to develop my writing skills.					
ERSQ 2I often work hard to do well in my writing even if I don't like English writing tasks.					
ERSQ 3Even if the writing activities are difficult, I don't give up but try to engage in them.					
ERSQ 4I concentrate as hard as I can when doing a writing task.					
ERSQ I spend a lot of time and energy on writing good English assignments.					

(iv) COGNITIVE (CWS)

ITEM	1	2	3	4	5
CWSQ1 I use memorized grammatical elements such as singular and plural forms, verb tenses, prefixes and suffixes, etc, in my writing					
CWSQ 2I put newly memorized vocabulary in my sentences.					
CWSQ 3In order to generate ideas for my writing, I usually engage myself in brainstorming.					
CWSQ 4I use different words that have the same meaning.					
CWSQ 5I use my experiences and knowledge in my writing.					
CWSQ 6I try to use effective linking words to ensure clear and logical relationship between sentences or paragraphs					

PART 5-SOCIAL (SWS)

ITEM	1	2	3	4	5
SWSQ1 In order to generate ideas for my writing, I usually discuss the writing topic with a friend or classmate.					
SWSQ 2After revising and editing my essay thoroughly, I ask a friend or my classmate to read and comment on it.					
SWSQ 3I try to identify friends or classmates whom I can ask for help in my writing.					
SWSQ 4 When I have trouble writing my essay, I try to do it with my classmates or friends.					

PART 6-AFFECTIVE (AWS)

ITEM	1	2	3	4	5
AWSQ1I try to write an essay in class with confidence and ease					
AWSQ2I try to relax whenever I feel afraid of writing.					
AWSQ3I encourage myself to write even when I am afraid of making mistakes					

SECTION B-CHATGPT

(v) CRITICAL THINKING ABILITIES (CT)

ITEM	1	2	3	4	5
CTQ1 I usually need clarification on the precision and reliability of information provided by ChatGPT, which enhances my critical thinking skills.					
CTQ2 ChatGPT's responses made me doubt their validity, leading me to seek further clarification or evidence.					
CTQ3 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.					
CTQ4I need clarification about the accuracy of ChatGPT's output, which often encourages me to evaluate the information and conduct additional research independently.					

(vi) ACADEMIC ACHIEVEMENTS (AA)

ITEM	1	2	3	4	5
AAQ1 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.					
AAQ2 ChatGPT brings innovative ideas that are ready to be shared with students.					
AAQ3 Students can anticipate robust writing guidance from ChatGPT.					
AAQ4 ChatGPT has improved my academic performance.					

(vii) CHATGPT USAGE (CU)

ITEM	1	2	3	4	5
CUQ1 ChatGPT is a state-of-the-art writing model that is favorably used today.					
CUQ2 Students seek help from ChatGPT's assistance in composing essays and articles.					
CUQ3 ChatGPT helps students in English language translation.					
CUQ4 Employing ChatGPT significantly improves human productivity.					
CUQ5 The advent of ChatGPT marks a groundbreaking transformation in Natural Language Processing capabilities.					

(viii) STUDENT ENGAGEMENT (SE)

ITEM	1	2	3	4	5
SEQ1 ChatGPT is more interactive, human-like, and engaging for the students.					
SEQ2 ChatGPT increases confidence in my ability to conduct research/to search for materials					
SEQ3 ChatGPT is easy to use and more engaging for me					