



How Do AI Tools such as ChatGPT Influence ESL University Students' Academic Writing Skills

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ABSTRACT

The rapid integration of Artificial Intelligence (AI) tools such as ChatGPT into education has transformed the way English as a Second Language (ESL) learners engage with academic writing. This study investigates how ESL university students utilize AI-assisted tools to support and enhance their writing skills, focusing on both the pedagogical benefits and emerging challenges. Employing a mixed-methods research design, data were collected from 50 first-year students enrolled in the Faculty of Arts and Culture at the South Eastern University of Sri Lanka. The research instruments included a questionnaire, semi-structured interviews with 10 selected participants, and writing samples; one produced with AI assistance and another without it. Quantitative data were analyzed using descriptive statistics, while qualitative data underwent thematic and content analysis. The findings revealed that most students perceived ChatGPT as a valuable learning companion that improved their vocabulary, grammar accuracy, and coherence. However, concerns were raised regarding over-reliance, diminished critical thinking, and academic integrity. The comparative analysis of writing samples demonstrated noticeable improvement in structure and lexical variety in AI-assisted texts, though human-authored pieces reflected more originality and contextual depth. The study concludes that while ChatGPT can serve as an effective supplementary writing tool, educators must guide students toward balanced, ethical, and independent use.

Keywords: ChatGPT, Artificial Intelligence, ESL learners, academic writing, mixed-methods research, higher education, language learning

1. INTRODUCTION

The rise of artificial intelligence (AI) has redefined the landscape of education, introducing new forms of interaction between learners, instructors, and technology. One of the most remarkable advancements in this field is ChatGPT, a large language model developed by OpenAI that generates human-like text responses through conversational interaction. Since its public release in late 2022, ChatGPT has rapidly gained popularity among students and educators for its capacity to assist with a wide range of academic tasks, including brainstorming, paraphrasing, and refining written texts (Barrot, 2023; Fitria, 2023). Within the domain of English as a Second Language (ESL) education, this tool represents both a pedagogical opportunity and a potential challenge, particularly in the development of academic writing skills where linguistic accuracy and critical thinking are essential (Imran & Almusharraf, 2023).

Academic writing remains one of the most demanding skills for ESL learners, as it requires mastery of grammar, organization, vocabulary, and rhetorical conventions. In university contexts, these challenges are magnified by the need to produce work that meets academic standards while expressing complex ideas clearly and coherently. Traditionally, students have relied on teacher feedback, peer review, and model essays to improve their writing (Anderson & Ayaawan, 2023). However, with limited teacher availability and large class sizes, many learners find it difficult to receive timely, individualized feedback (Huisman et al., 2019). Consequently, AI-powered tools such as ChatGPT have emerged as appealing alternatives, providing immediate linguistic assistance, suggestions for improvement, and explanations of grammatical or stylistic errors (Allagui, 2023; Chang et al., 2021).

Research on AI-assisted writing has revealed both promising benefits and emerging concerns. Several studies highlight that tools like ChatGPT can significantly improve learners' engagement, writing fluency, and confidence (Ali et al., 2023; Su, Lin, & Lai, 2023). According to Barrot (2023), ChatGPT can act as a writing companion, offering contextualized feedback that promotes self-editing and vocabulary enrichment. Similarly, Fitria (2023) found that ESL learners perceived ChatGPT as a valuable aid for essay writing, particularly in generating ideas, structuring paragraphs, and improving lexical range. These findings suggest that AI technologies can complement conventional writing instruction by making learning more autonomous and interactive.

Moreover, ChatGPT's potential for personalized learning aligns with constructivist and learner-centered approaches in language pedagogy. As Imran and Almusharraf (2023) note, AI tools can adapt to users' proficiency levels, offering differentiated feedback that supports individual learning trajectories. This feature is particularly relevant in multilingual university settings, where students exhibit diverse levels of language competence and writing experience. In such environments, ChatGPT can function as a flexible tutoring system that enhances accessibility to learning resources and reduces dependence on teacher feedback (Guo et al., 2022).

Despite these advantages, educators and researchers express growing concerns regarding ethical implications and academic integrity. Chan and Hu (2023) reported that while many university students appreciated the efficiency of ChatGPT, they also questioned its reliability and feared the temptation to overuse it for generating entire texts. Likewise, Ali et al. (2023) observed that although ChatGPT increased learners' motivation, it sometimes led to superficial learning and reduced engagement with original thought. Similarly, Tai, Meyer, and Krausz (2023) cautioned that AI-generated writing could perpetuate linguistic biases and homogenized language patterns, which may hinder the authentic expression of students' voices. These challenges raise critical questions about balancing the pedagogical benefits of AI with the preservation of academic integrity and independent thinking.

The accuracy and quality of AI feedback also remain contentious. Allagui (2023) analyzed ChatGPT's feedback on student writing and found that while it offered useful corrections at the surface level (grammar and vocabulary), it was less effective in providing higher-order feedback related to argumentation, organization, and content development. Similar findings were reported by Dai et al. (2023), who concluded that ChatGPT's evaluative comments often lack pedagogical nuance and may mislead students if used uncritically. These limitations emphasize the necessity of integrating AI use within structured pedagogical frameworks rather than viewing it as a standalone learning solution.

Another key dimension concerns student perceptions and attitudes toward AI tools in academic contexts. Studies indicate that while most ESL students regard AI as a supportive learning aid, their attitudes vary depending on their proficiency level, experience, and understanding of academic writing conventions (Yan, 2023; Fitriana & Nurazni, 2022). For instance, beginner writers often rely on ChatGPT for linguistic accuracy, whereas advanced learners tend to use it for stylistic refinement and idea generation. However, over-reliance on AI tools may hinder learners' capacity for independent revision and critical analysis; skills central to academic literacy (Marzuki et al., 2023). This duality reflects an ongoing tension between technological facilitation and cognitive development in ESL writing instruction.

Furthermore, the pedagogical integration of ChatGPT requires rethinking teacher roles and feedback practices. As Bonner et al. (2023) argue, AI can serve as a collaborative teaching assistant, providing immediate feedback that complements teacher input. Nevertheless, effective implementation depends on instructors' digital literacy and their ability to guide students in evaluating AI-generated suggestions critically. Winstone and Carless (2020) emphasized that feedback only fosters learning when learners actively engage with it; therefore, teachers must cultivate reflective practices that help students use AI responsibly. Such integration also calls for ethical guidelines to prevent plagiarism and misuse, ensuring that ChatGPT supports rather than replaces authentic learning efforts.

Overall, the increasing incorporation of ChatGPT into ESL university settings reflects a broader shift toward AI-mediated education, where human and machine intelligence interact to support learning. While its linguistic, motivational, and accessibility benefits are evident, unresolved concerns about accuracy, originality, and dependence persist. Current scholarship reveals a need for continued empirical investigation into how ESL learners actually employ ChatGPT, how it influences their writing process, and what pedagogical adjustments are necessary to harness its potential effectively. The conversation around AI-assisted writing thus moves beyond technological fascination toward a critical examination of its implications for language education, learner autonomy, and academic ethics.

Research problem and purpose

Academic writing is a fundamental skill for university students, particularly for those learning English as a Second Language (ESL). Developing proficiency in academic writing requires mastery over grammar, vocabulary, organization, argumentation, and critical thinking (Anderson & Ayaawan, 2023; Huisman et al., 2019). Despite structured instruction, ESL learners often face difficulties in expressing complex ideas, maintaining coherence, and adhering to academic conventions, which can hinder both academic performance and confidence (Fitria, 2023; Imran & Almusharraf, 2023). Traditional pedagogical practices, including teacher feedback and peer review, provide essential support but are frequently constrained by class size, time limitations, and the subjective nature of evaluation (Allagui, 2023; Winstone & Carless, 2020). Consequently, ESL students increasingly seek technological tools that offer immediate, flexible, and personalized assistance to improve their writing skills.

In recent years, AI tools such as ChatGPT have emerged as transformative resources in educational contexts. These tools can generate coherent text, suggest vocabulary and sentence structures, and provide feedback in real time, making them appealing for ESL learners aiming to enhance their academic writing (Barrot, 2023; Imran & Almusharraf, 2023). Research suggests that ChatGPT can help overcome challenges such as writer's block, limited lexical resources, and difficulty in structuring arguments (Fitria, 2023; Su, Lin, & Lai, 2023). However, while AI-assisted tools offer significant advantages, concerns regarding over-reliance, plagiarism, and ethical use have been highlighted by scholars (Chan & Hu, 2023; Ali et al., 2023; Tai, Meyer, & Krausz, 2023). Moreover, the actual impact of ChatGPT on the quality of ESL students' academic writing and their independent cognitive engagement remains underexplored, particularly in university-level contexts where high academic standards are expected.

The purpose of this study is to examine how ESL university students use AI tools such as ChatGPT and to investigate the effects of such tools on their academic writing skills. Specifically, this research aims to understand the benefits, challenges, and potential risks associated with AI-assisted writing, as well as its influence on students' autonomy, writing quality, and engagement with academic conventions. By exploring these dimensions, the study seeks to provide insights into the pedagogical integration of AI in ESL writing instruction and inform strategies to balance technological assistance with the development of independent and critical writing skills (Barrot, 2023; Marzuki et al., 2023; Yan, 2023).

Research Questions

Based on the focus of this study, the following research questions are proposed:

1. How do ESL university students use AI tools such as ChatGPT to support their academic writing tasks?

2. What are the perceived benefits and challenges of using ChatGPT for improving academic writing skills among ESL learners?
3. How does the use of AI-assisted tools influence ESL students' autonomy, engagement, and overall writing performance?

Research Objectives

The objectives of this study are as follows:

1. To explore the ways in which ESL university students utilize AI tools such as ChatGPT in their academic writing process.
2. To identify the advantages and challenges perceived by students when using AI-assisted writing tools.
3. To examine the effects of AI-assisted writing on students' autonomy, engagement, and the quality of their academic writing output.

The integration of AI tools like ChatGPT in ESL university education has the potential to reshape the way students approach academic writing. While these tools provide immediate feedback, linguistic support, and enhanced motivation, they also raise concerns regarding over-reliance, academic integrity, and the depth of cognitive engagement. By investigating how students employ ChatGPT, the perceived benefits and drawbacks, and its influence on writing performance, this study aims to contribute valuable insights into the pedagogical use of AI in language learning. The findings are expected to inform educators and policymakers on how to strategically incorporate AI tools into ESL writing instruction while maintaining a balance between technological support and the cultivation of independent, critical, and academically

2. LITERATURE REVIEW

The integration of Artificial Intelligence (AI) into language education has significantly transformed teaching and learning practices, particularly in the context of English as a Second Language (ESL). AI tools such as ChatGPT provide immediate, interactive, and context-aware assistance for various academic tasks, including writing, editing, and idea generation (Barrot, 2023; Fitria, 2023). Research has demonstrated that these tools have the potential to enhance students' writing skills by offering both surface-level linguistic corrections and guidance on higher-order aspects such as coherence and structure (Allagui, 2023; Marzuki et al., 2023). This literature review synthesizes the current scholarship on AI-assisted writing, focusing on ESL learners' experiences, pedagogical applications, benefits, challenges, and implications for academic writing development.

AI Tools in Academic Writing

AI-assisted writing tools, including ChatGPT, have emerged as innovative resources for ESL learners to improve their academic writing. These tools generate human-like text and provide suggestions for vocabulary, grammar, sentence structure, and overall composition (Barrot, 2023; Imran & Almusharraf, 2023). Fitria (2023) notes that ChatGPT helps learners overcome writer's block and supports them in organizing ideas logically. Su, Lin, and Lai (2023) highlight the utility of ChatGPT in collaborative writing classrooms, where students use AI-generated suggestions to refine arguments and enhance textual coherence.

Studies have also investigated the role of AI in providing automated feedback. Allagui (2023) found that AI chatbots deliver effective surface-level feedback on grammar and mechanics but are limited in addressing higher-order writing issues such as argument development and critical analysis. Similarly, Dai et al. (2023) emphasized that while AI tools can serve as immediate feedback providers, they cannot fully replace teacher judgment and nuanced instruction.

Perceived Benefits for ESL Learners

A growing body of research highlights the benefits of AI-assisted writing for ESL learners. One of the most notable advantages is enhanced writing fluency and efficiency. Ali et al. (2023) observed that learners reported increased motivation and confidence when using ChatGPT for drafting essays, as the tool allowed them to focus on idea generation without being constrained by linguistic limitations. Barrot (2023) similarly found that AI assistance enables students to experiment with complex sentence structures and vocabulary, fostering both linguistic and cognitive engagement.

Moreover, AI tools promote personalized and learner-centered instruction. Imran and Almusharraf (2023) argue that ChatGPT adapts to students' language proficiency, providing differentiated guidance that aligns with individual learning needs. This adaptive capability is particularly beneficial in multilingual university contexts, where students possess varying levels of writing competence. According to Marzuki et al. (2023), AI-generated feedback also encourages self-regulation and iterative revision, supporting students' development of autonomous writing skills.

Challenges and Limitations

Despite these advantages, several challenges have been noted in the literature. One major concern is the risk of over-reliance. Chan and Hu (2023) reported that students might become dependent on AI tools for sentence construction and idea generation, potentially limiting their independent cognitive engagement. Ali et al. (2023) further caution that excessive reliance on ChatGPT could lead to superficial learning, where students prioritize convenience over critical thinking and original composition.

Ethical concerns, including plagiarism and academic integrity, have also been highlighted. Tai, Meyer, and Krausz (2023) emphasized that AI-generated content can inadvertently encourage unethical practices if students submit work without sufficient modification or critical engagement. Additionally, the accuracy of AI feedback remains a challenge. Allagui (2023) found that while ChatGPT excels in correcting grammar and syntax, it often provides generic suggestions that may not align with specific academic or disciplinary expectations.

Pedagogical Implications

The integration of AI tools into ESL instruction necessitates rethinking teacher roles and feedback practices. Bonner, Lege, and Frazier (2023) argue that AI should complement rather than replace human feedback. Instructors must guide students in critically evaluating AI-generated suggestions and integrating them into their writing process meaningfully. Winstone and Carless (2020) stress that effective feedback, whether human or AI-assisted, requires active learner engagement; students must reflect on suggestions, revise drafts iteratively, and develop self-assessment skills.

Furthermore, AI tools provide opportunities for collaborative and interactive learning. Su, Lin, and Lai (2023) illustrate that students can use ChatGPT to co-construct argumentative essays, facilitating peer discussion and collaborative editing. Similarly, Guo, Wang, and Chu (2022) emphasize the role of AI in scaffolding argumentative writing tasks, helping learners structure ideas and connect evidence coherently.

Student Perceptions and Engagement

Students' attitudes toward AI-assisted writing vary depending on proficiency, prior experience, and understanding of academic writing conventions. Yan (2023) found that beginner ESL learners primarily rely on ChatGPT for grammatical accuracy, while advanced students use it to refine style, vocabulary, and argumentative flow. Fitriana and Nurazni (2022) highlight that positive perceptions of AI tools correlate with increased engagement and motivation, suggesting that integrating these tools can enhance both learning outcomes and learner confidence. However, careful guidance is essential to mitigate over-dependence and ensure that AI serves as a supportive rather than dominant force in the writing process.

Overall, the literature indicates that AI tools such as ChatGPT hold significant potential for enhancing ESL students' academic writing. They offer immediate feedback, facilitate idea generation, and support learner autonomy, making them valuable complements to traditional instructional methods (Barrot, 2023; Imran & Almusharraf, 2023; Marzuki et al., 2023). However, challenges related to over-reliance, academic integrity, and the limitations of AI feedback remain pressing concerns (Chan & Hu, 2023; Tai, Meyer, & Krausz, 2023). The effective integration of AI into ESL writing instruction requires structured pedagogical strategies, active engagement, and ethical awareness. Future research should continue to examine the nuanced impact of AI on both the quality of students' writing and their cognitive engagement to ensure a balanced and effective approach to AI-assisted language learning.

Research Gap

The adoption of AI tools such as ChatGPT in ESL academic writing is gaining momentum, yet the extant literature reveals several gaps that warrant further investigation. While studies have explored the potential of AI-assisted tools in providing immediate feedback and enhancing learners' writing performance (Barrot, 2023; Imran & Almusharraf, 2023; Marzuki et al., 2023), much of this research has primarily focused on general observations and systematic reviews rather than empirical investigations within specific university contexts. For instance, Ali et al. (2023) highlighted the motivational benefits of ChatGPT but did not systematically measure its impact on students' actual writing quality or cognitive engagement. Similarly, Chan and Hu (2023) examined student perceptions of generative AI but provided limited insights into how these perceptions translate into improved academic writing skills.

Moreover, prior research often emphasizes surface-level writing improvements, such as grammar and vocabulary correction, rather than higher-order writing skills, including argumentation, organization, and critical thinking (Allagui, 2023; Guo, Wang, & Chu, 2022). While tools like ChatGPT can scaffold these aspects, empirical evidence demonstrating their effectiveness in fostering independent, academically proficient writing among ESL university students remains sparse.

Another notable gap concerns students' autonomy and ethical engagement with AI-assisted writing. Tai, Meyer, and Krausz (2023) and Ali et al. (2023) caution that over-reliance on AI may undermine learners' ability to critically engage with writing tasks, yet there is limited empirical research exploring how ESL learners balance AI support with independent cognitive effort in real academic settings. Additionally, much of the literature has been conducted in Western or general educational contexts, with relatively few studies focusing on ESL university students in multilingual or non-Western settings, limiting the generalizability of existing findings (Fitria, 2023; Yan, 2023).

Therefore, despite the growing interest in AI-assisted writing, there remains a critical need for research that examines how ESL university students use ChatGPT in authentic academic writing tasks, assesses both surface-level and higher-order writing outcomes, and investigates the interplay between AI support, learner autonomy, and cognitive engagement. Addressing these gaps will provide a more comprehensive understanding of the pedagogical implications of AI tools in ESL writing instruction and inform effective, context-sensitive integration strategies (Barrot, 2023; Su, Lin, & Lai, 2023).

3. METHODOLOGY

Research Design

This study employed a mixed-methods research design, combining both quantitative and qualitative approaches to comprehensively investigate the influence of AI tools such as ChatGPT on ESL university students' academic writing skills. Mixed-methods research enables the integration of numerical data with rich narrative insights, providing a more holistic understanding of complex educational phenomena (Creswell & Plano Clark, 2017). The quantitative component of the study aimed to measure observable outcomes in students' writing performance, including grammar accuracy, vocabulary usage, and overall coherence. Conversely, the qualitative component sought to explore students' experiences, perceptions, and attitudes toward using ChatGPT as a writing tool.

The rationale for selecting a mixed-methods design lies in its ability to triangulate findings, thereby enhancing the validity and reliability of the research (Creswell & Plano Clark, 2017; Loewen & Plonsky, 2017). While quantitative data provides measurable evidence of improvements in writing performance, qualitative data captures the nuanced ways in which students engage with AI-assisted writing. This approach is particularly appropriate for investigating the multifaceted impacts of AI in language learning, as it accounts for both performance outcomes and learner perceptions, which are often overlooked in studies focusing solely on one methodological paradigm (Barrot, 2023; Imran & Almusharraf, 2023).

Study Setting

The study was conducted at the South Eastern University of Sri Lanka (SEUSL), specifically within the Faculty of Arts and Culture. SEUSL is a leading higher education institution in the Eastern Province of Sri Lanka, offering programs in multiple disciplines, including language studies and cultural studies. The university hosts a diverse student body, including bilingual and multilingual learners who face varying challenges in acquiring English academic writing skills.

The Faculty of Arts and Culture was chosen due to its emphasis on English language proficiency and its structured curriculum in Elementary English courses for first-year students. These courses are designed to develop foundational academic writing skills, including sentence construction, paragraph development, and essay composition. Conducting the study in this setting allowed for an authentic examination of how first-year ESL learners interact with AI-assisted writing tools in their natural academic environment. Furthermore, the university's resources, including computer labs and internet access, provided students with the necessary infrastructure to use ChatGPT effectively, ensuring that technological limitations would not confound the results (Fitria, 2023; Yan, 2023).

Sampling Procedure

A purposive sampling procedure was employed to select participants for this study. Purposive sampling, a non-probability sampling technique, allows researchers to select individuals who possess specific characteristics relevant to the research objectives (Perry, 2011; Gopalan, Rosinger, & Ahn, 2020). In this case, participants were chosen based on their enrollment in the Elementary English Level-2 course at SEUSL, as this course represents the initial stage of formal academic writing development at the university level.

Purposive sampling was deemed appropriate for several reasons. First, it ensured that all participants had a comparable baseline in English proficiency, which is crucial for isolating the effects of AI-assisted writing tools. Second, this sampling strategy facilitated the inclusion of students who had prior exposure to both traditional writing instruction and AI-based tools, allowing for meaningful comparisons and insights into students' experiences. Third, purposive sampling aligns with the exploratory nature of this study, which aims to investigate not only measurable outcomes but also learners' perceptions, strategies, and engagement with ChatGPT (Creswell & Plano Clark, 2017; Barrot, 2023).

Participants

The study involved 50 first-year students from the Faculty of Arts and Culture at SEUSL, all of whom were enrolled in the Elementary English Level-2 course. The participants represented a balanced mix of genders, linguistic backgrounds, and prior English learning experiences, reflecting the demographic diversity of the faculty. Students ranged in age from 18 to 22 years, with varying degrees of familiarity with digital technologies and AI tools.

These participants were selected because they were actively engaged in developing foundational academic writing skills, making them ideal candidates for investigating the influence of ChatGPT on writing development. The focus on first-year learners allows the study to examine the early impact of AI-assisted tools on academic writing, providing insights into how these technologies can be integrated into higher education language instruction (Fitria, 2023; Yan, 2023).

The participants were informed about the purpose and procedures of the study and provided informed consent prior to participation, ensuring ethical standards were maintained. Confidentiality and anonymity were guaranteed, and students were assured that their participation or responses would not affect their academic assessment. This ethical consideration aligns with standard practices in educational research involving human subjects (Creswell & Plano Clark, 2017; Perry, 2011).

By employing a mixed-methods design, situating the study within the authentic context of SEUSL, and purposively sampling 50 first-year ESL learners, this methodology allows for a comprehensive exploration of both the measurable and experiential impacts of ChatGPT on academic writing. The next sections will describe the research instruments, data collection procedures, and analysis methods used to address the research questions effectively.

Research Instruments

To gather comprehensive data on the influence of AI tools such as ChatGPT on ESL students' academic writing skills, this study employed multiple research instruments: a questionnaire, semi-structured interviews, and writing samples. Utilizing diverse instruments ensures triangulation, which strengthens the credibility and validity of the findings (Creswell & Plano Clark, 2017; Loewen & Plonsky, 2017).

Questionnaire: A structured questionnaire was designed to collect quantitative data from all 50 first-year participants enrolled in the Elementary English Level-2 course. The questionnaire included sections on demographic information, frequency and patterns of ChatGPT use, perceived benefits in academic writing, challenges encountered, and students' attitudes toward AI-assisted writing. The items were constructed using a Likert-scale format to facilitate statistical analysis while also including open-ended questions to capture brief qualitative insights. Questionnaires were selected as a primary instrument due to their efficiency in collecting data from a relatively large sample and their ability to provide quantifiable insights into AI usage patterns and perceptions (Barrot, 2023; Imran & Almusharraf, 2023).

Semi-Structured Interviews: To deepen understanding of students' experiences and perceptions, 10 participants were purposively selected from the questionnaire respondents based on diverse patterns of AI tool usage. Semi-structured interviews allow participants to express their experiences and insights in detail while providing flexibility for the researcher to probe emerging themes (Tracy, 2019). Interview questions focused on the process of writing with AI, perceived improvements in grammar, coherence, and vocabulary, challenges in integrating AI feedback, and ethical considerations in using ChatGPT. This qualitative component complements the questionnaire data by providing a richer understanding of learners' cognitive and motivational engagement (Ali et al., 2023; Su, Lin, & Lai, 2023).

Writing Samples: To objectively assess the impact of AI on academic writing, participants were asked to submit two short writing samples: one produced with AI assistance and one without AI support. These samples were analyzed comparatively to evaluate differences in grammatical accuracy, lexical richness, coherence, and critical thinking. The collection of writing samples provides tangible evidence of performance outcomes, allowing the researcher to correlate students' self-reported perceptions with actual writing performance (Marzuki et al., 2023; Barrot, 2023).

Data Collection Procedure

Before initiating data collection, permission was obtained from the relevant university authorities to ensure ethical compliance and institutional support. Participants were briefed about the purpose of the study, procedures, and confidentiality measures. Informed consent was obtained, and students were assured that participation was voluntary and would not affect their academic assessment (Creswell & Plano Clark, 2017).

The questionnaire was distributed online via Google Forms, allowing participants to respond conveniently and safely. After the completion of questionnaires, responses were analyzed to identify patterns of AI use and notable variations in students' engagement.

Following questionnaire analysis, semi-structured interviews were conducted with 10 selected participants who demonstrated diverse usage patterns. The interviews were audio-recorded with participants' consent and later transcribed verbatim to ensure accuracy in capturing participants' responses (Tracy, 2019).

Finally, participants submitted writing samples, with clear instructions to produce one essay or paragraph independently and another with AI assistance. This procedure enabled the researcher to directly compare the quality of AI-assisted versus non-AI-assisted writing while controlling for topic familiarity and task type.

Data Analysis

Quantitative Data Analysis: Data from the questionnaire were analyzed using descriptive statistics, including frequencies, percentages, and mean scores. Descriptive analysis provides an overview of students' usage patterns, perceived benefits, and challenges associated with AI-assisted writing. Additionally, statistical summaries help identify general trends and patterns, informing the selection of participants for interviews and guiding qualitative exploration (Creswell & Plano Clark, 2017; Loewen & Plonsky, 2017).

Qualitative Data Analysis: Interview transcripts were analyzed through thematic analysis, following the six-phase approach outlined by Braun and Clarke (2006). Initially, the researcher familiarized with the data through repeated reading of transcripts, followed by coding meaningful units of text. Codes were then grouped into categories, from which emerging themes were identified. Expected themes included "learning support," "over-reliance," "motivation," and "ethical concerns," though the analysis remained inductive to allow unanticipated insights to emerge (Tracy, 2019; Ali et al., 2023).

Writing Sample Analysis: Writing samples were analyzed using comparative content analysis to assess grammatical accuracy, coherence, vocabulary range, and critical thinking. Both quantitative indicators (e.g., error counts, lexical diversity) and qualitative judgments (e.g., logical progression, argumentation strength) were employed. By examining these samples, the researcher could identify specific areas where AI support influenced writing performance, thereby linking subjective perceptions with measurable writing outcomes (Marzuki et al., 2023; Su, Lin, & Lai, 2023).

The combination of questionnaire data, interview narratives, and writing samples allows for triangulation, ensuring that findings are robust, credible, and comprehensive. This methodology addresses both the practical outcomes of AI-assisted writing and the cognitive and motivational processes underlying ESL students' engagement with ChatGPT.

4. FINDINGS

The first part of the findings presents the quantitative results derived from the questionnaire administered to 50 first-year ESL students at the Faculty of Arts and Culture, South Eastern University of Sri Lanka. The questionnaire aimed to examine students' usage patterns, perceived benefits, and challenges of using AI tools such as ChatGPT for academic writing. Descriptive statistics, including frequencies, percentages, and mean scores, were calculated to summarize students' responses.

Frequency and Purpose of Using ChatGPT

A significant majority of participants reported using ChatGPT or other AI-based tools to support their English writing tasks. As shown in Table 1, 84% of the respondents indicated that they use ChatGPT at least once a week, while 46% reported using it regularly for academic writing tasks such as essay drafting, grammar checking, and paraphrasing. Only 16% reported never using AI tools for writing purposes.

Table 4.1: Frequency of ChatGPT Usage among ESL Students (n = 50)

Frequency of Use	Number of Students	Percentage (%)
Daily	12	24%
Weekly	30	60%
Rarely	6	12%
Never	2	4%
Total	50	100%

Students reported using ChatGPT for a variety of purposes, including generating ideas, checking grammar and vocabulary, improving coherence, and rephrasing sentences. The highest reported use was for grammar correction (82%) and vocabulary improvement (76%), followed by idea generation (68%) and sentence structuring (62%). These findings indicate that ChatGPT functions primarily as a linguistic support tool, helping students overcome surface-level writing difficulties, which aligns with findings from Barrot (2023) and Marzuki et al. (2023), who observed similar patterns among ESL learners in higher education.

Perceived Benefits of Using ChatGPT in Writing

The questionnaire also examined how students perceive the effectiveness of ChatGPT in enhancing their academic writing. Most respondents agreed that ChatGPT improved their grammatical accuracy, vocabulary range, and confidence in writing. Table 2 summarizes students’ responses to benefit-related statements measured on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree).

Table 4.2: Perceived Benefits of Using ChatGPT (n = 50)

Benefit Statement	Mean	SD	Agreement (%)
ChatGPT helps me correct grammar errors.	4.42	0.58	92%
It improves my vocabulary and word choice.	4.26	0.65	88%
It helps me organize my ideas better.	4.02	0.71	80%
It increases my confidence in writing.	4.10	0.67	82%
It saves time during essay writing.	4.34	0.61	86%

Students viewed ChatGPT as a valuable language learning assistant that enhances both linguistic and psychological aspects of writing. Many reported that the instant feedback from ChatGPT improved their self-efficacy, motivating them to engage more actively with writing tasks. This is consistent with Ali et al. (2023), who found that AI-based feedback systems can boost learner motivation by providing immediate, non-judgmental feedback. Similarly, Su, Lin, and Lai (2023) argue that ChatGPT can scaffold argumentative writing by supporting idea development and structure.

Moreover, learners highlighted that ChatGPT enables them to practice self-directed learning, as they can independently edit and refine their drafts. This aligns with the principles of learner autonomy and self-regulation in language learning (Imran & Almusharraf, 2023; Chan & Hu, 2023).

Perceived Challenges and Risks of Using ChatGPT

Despite recognizing its benefits, several participants expressed concerns regarding accuracy, over-reliance, and ethical issues. As shown in Table 3, a considerable proportion of students agreed that ChatGPT’s suggestions are not always reliable, and excessive dependence may hinder their ability to write independently.

Table 4.3: Perceived Challenges of Using ChatGPT (n = 50)

Challenge Statement	Mean	SD	Agreement (%)
Sometimes ChatGPT gives inaccurate or irrelevant content.	3.86	0.74	72%
I rely too much on ChatGPT when writing.	3.94	0.70	76%
ChatGPT makes me less confident in my own writing ability.	3.62	0.78	68%
I am concerned about plagiarism or originality issues.	4.08	0.66	84%
I am not sure when it is appropriate to use ChatGPT for academic tasks.	3.92	0.72	78%

The data reveal that while students appreciate ChatGPT’s usefulness, they are also aware of its limitations and ethical dilemmas. Concerns about academic integrity, plagiarism, and reduced cognitive engagement were widely expressed. These perceptions echo the findings of Tai et al. (2023) and Rudolph et al. (2023), who caution that AI-generated writing may compromise authenticity and blur the boundaries of academic ownership.

Additionally, some students mentioned that AI-generated suggestions sometimes misrepresent content or use overly complex vocabulary, making their writing sound unnatural. Barrot (2023) similarly reported that students often accept AI feedback uncritically, which can lead to inaccuracies and stylistic inconsistencies. Therefore, while ChatGPT enhances surface-level accuracy, it may not always promote deeper learning or critical thinking.

Impact of ChatGPT on Writing Confidence and Autonomy

An important dimension of the questionnaire explored whether the use of ChatGPT contributes to students' confidence and independence as writers. Findings indicated that while 78% of respondents felt more confident due to ChatGPT's support, 64% admitted they would struggle to complete writing tasks without it. This paradox highlights a double-edged nature of AI integration: while promoting engagement and reducing anxiety, it may also foster dependency.

Students who used ChatGPT moderately (weekly or occasionally) showed higher self-reported writing confidence than those who used it daily. This suggests that balanced use of AI tools, combined with human feedback and reflection, is more effective than overuse (Marzuki et al., 2023; Fitria, 2023).

In summary, the questionnaire results demonstrate that ChatGPT plays a significant role in ESL students' writing practices at the university level. The tool is predominantly used for grammatical correction, vocabulary enhancement, and content organization, leading to increased motivation and confidence. However, challenges related to accuracy, ethical concerns, and dependence were also evident.

Overall, the quantitative data suggest that while AI tools like ChatGPT provide valuable linguistic and motivational support, their pedagogical effectiveness depends on responsible use and critical engagement. The upcoming qualitative findings (Part 2) will provide deeper insights into how students navigate these benefits and challenges in practice.

To further understand how ESL university students perceive and experience the use of AI tools such as ChatGPT in their academic writing, semi-structured interviews were conducted with 10 students selected from the questionnaire participants. The selection was based on diversity in AI usage frequency (high, moderate, and low users) and writing proficiency. Additionally, each student submitted two short writing samples; one produced with ChatGPT assistance and another written independently.

The qualitative data were analyzed thematically, revealing four major themes:

1. ChatGPT as a writing assistant and confidence booster
2. Developing language awareness and accuracy through AI feedback
3. Emerging dependency and ethical concerns
4. Differences between AI-assisted and self-written samples

These themes provide insights into how students integrate ChatGPT into their writing practices, the perceived learning outcomes, and the challenges of balancing AI support with independent learning.

ChatGPT as a Writing Assistant and Confidence Booster

Most participants viewed ChatGPT as a helpful companion in their writing process. Students described how the tool provided immediate guidance, especially when they felt "stuck" or uncertain about vocabulary and sentence structure.

"When I don't know how to start my paragraph, ChatGPT gives me ideas. Then I can write more easily," (Student 3).

"It helps me fix my grammar quickly and I feel more confident to submit my assignments," (Student 7).

Students frequently used ChatGPT for *draft generation*, *rephrasing*, and *checking errors*, which made the writing process less intimidating. Several students mentioned that they had previously experienced writing anxiety, but ChatGPT helped reduce that by offering constant, low-pressure feedback.

This aligns with findings from Ali et al. (2023) and Imran and Almusharraf (2023), who note that AI-assisted feedback can reduce writing apprehension and enhance students' confidence, especially among second-language learners. Students' narratives suggest that ChatGPT fosters a *sense of control* and *immediacy* in their writing process, enabling them to experiment with English structures more freely.

However, a few students expressed that the confidence gained might be "temporary," as they often rely on AI to reassure them that their work is correct. This indicates that while ChatGPT boosts short-term confidence, it may not always lead to genuine self-efficacy (Rudolph et al., 2023).

Developing Language Awareness and Accuracy through AI Feedback

Another emerging theme was that ChatGPT played a significant role in enhancing students' language awareness. Many students reported that repeated interaction with ChatGPT helped them notice grammatical patterns, new vocabulary, and sentence cohesion.

"I learn new expressions from ChatGPT. Sometimes I copy them in my notebook to use later," (Student 2).

"When it corrects my grammar, I try to understand why it changed it. So, it's like a teacher explaining," (Student 9).

These reflections suggest that ChatGPT serves as an implicit learning aid, encouraging learners to observe how language functions within context. This supports Barrot’s (2023) claim that AI tools can provide input enhancement, helping ESL learners internalize language features through repeated exposure and correction.

Furthermore, several students reported improvement in their organization and coherence. ChatGPT’s structured suggestions (such as using topic sentences or transition words) provided scaffolding for developing paragraph flow. Su, Lin, and Lai (2023) similarly argue that ChatGPT can scaffold argumentative writing by modeling coherent text structures that students can emulate.

Nonetheless, not all students engaged with the feedback critically. Some mentioned that they accepted AI suggestions “without thinking,” which limited opportunities for deep learning. This finding resonates with Marzuki et al. (2023), who warn that uncritical acceptance of AI-generated feedback may reinforce surface-level revisions rather than critical engagement.

Emerging Dependency and Ethical Concerns

Despite recognizing its advantages, students expressed concerns about dependency and ethical use. Several participants acknowledged that they often use ChatGPT to complete entire paragraphs or assignments, which may compromise originality.

“Sometimes I copy what ChatGPT gives because it sounds perfect. But then I feel it’s not really my writing,” (Student 5).

“If I use it too much, I forget how to write on my own,” (Student 10).

This indicates a tension between convenience and authenticity. Many students understood that excessive reliance on ChatGPT could undermine their writing ability, yet they struggled to resist using it, especially under time pressure. This echoes Tai et al. (2023) and Chan and Hu (2023), who reported that students face moral and academic integrity dilemmas when integrating generative AI into coursework.

Furthermore, ethical awareness varied among participants. Some expressed uncertainty about what counts as “acceptable use” in academic contexts. One participant stated,

“Our lecturers didn’t clearly say whether using ChatGPT is allowed. So, I’m confused,” (Student 8).

This uncertainty highlights the need for universities to establish clear AI-use policies and offer digital ethics training (Rudolph et al., 2023; Su et al., 2023).

Overall, the interviews revealed that while students valued ChatGPT’s efficiency, they were simultaneously aware of its risks; particularly plagiarism, loss of originality, and overdependence. These concerns mirror the quantitative findings, where over 70% of respondents agreed that ChatGPT can make them overly reliant or less confident in their own writing ability.

Differences Between AI-Assisted and Self-Written Samples

The comparative analysis of writing samples provided tangible evidence of ChatGPT’s impact on students’ writing. Across participants, the AI-assisted samples generally demonstrated:

- Fewer grammatical and spelling errors
- More varied vocabulary
- Better coherence and paragraph structure

However, these samples also tended to be less personal and less critical. In contrast, self-written samples reflected more authentic voice and creativity, though they contained more linguistic inaccuracies.

Table 4.4: Comparison of AI-Assisted vs. Self-Written Samples

Feature	AI-Assisted Writing	Self-Written Writing
Grammar accuracy	High (few or no grammatical errors)	Moderate (frequent errors)
Vocabulary range	Broad, but sometimes unnatural	Limited, but contextually appropriate
Coherence	Well-organized paragraphs	Some disorganization or missing links
Creativity	Limited; formulaic expressions	More original ideas and examples
Critical thinking	Surface-level	More reflection and personal opinions
Authentic voice	Weak or mechanical	Strong and genuine

This pattern is consistent with Fitria (2023) and Marzuki et al. (2023), who observed that AI-generated or AI-assisted writing is linguistically polished but cognitively shallow. The findings suggest that ChatGPT assists with *form*, but human-written content shows greater *substance*.

Notably, several students themselves recognized this difference:

“When I use ChatGPT, my writing looks professional, but it doesn’t sound like me,” (Student 6).

“My own writing has mistakes, but I feel proud because it’s my effort,” (Student 1).

This indicates that while students appreciate the linguistic accuracy of AI-assisted writing, they also value the authenticity and learning opportunity that come from writing independently. These insights underline the importance of integrating AI tools responsibly, emphasizing them as *learning aids* rather than *writing substitutes*.

The qualitative data deepened understanding of how ESL students interact with ChatGPT in their writing practices. ChatGPT serves as an *instant writing assistant*, providing scaffolding for grammar, vocabulary, and structure. It fosters confidence and language awareness, particularly among those who actively reflect on its feedback. However, challenges of overdependence, academic ethics, and reduced creativity were evident.

The writing sample analysis further confirmed that AI assistance enhances linguistic precision but often at the expense of authenticity and critical thought. Therefore, educators should aim to guide students in balanced AI integration, promoting critical reflection and independent skill development.

The next chapter will integrate both quantitative and qualitative results, highlighting pedagogical implications and recommendations for AI-informed ESL writing instruction.

Discussion

The findings of this study reveal that AI tools such as ChatGPT have both facilitative and constraining effects on ESL university students’ academic writing skills. Consistent with prior studies (Barrot, 2023; Su, Lin, & Lai, 2023), the data from questionnaires, interviews, and writing samples demonstrate that ChatGPT enhances grammatical accuracy, vocabulary range, and organizational coherence, yet simultaneously raises concerns about authenticity, over-reliance, and ethical boundaries.

Enhancement of Writing Performance

The quantitative data showed that a majority of participants (84%) believed ChatGPT improved their grammar and vocabulary, and this was confirmed by the writing sample analysis, where AI-assisted writing displayed higher linguistic accuracy and coherence. These findings align with Imran and Almusharraf (2023) and Marzuki et al. (2023), who found that ChatGPT’s instant feedback supports learners in identifying and correcting linguistic errors, thereby promoting short-term language accuracy.

The immediate availability and non-judgmental feedback of ChatGPT appear to increase learner confidence and writing fluency (Ali et al., 2023). Students also reported learning new structures through AI-generated corrections, which reflects the potential of ChatGPT as a form of automated scaffolding that promotes noticing; a critical mechanism in second language acquisition (Barrot, 2023).

Challenges of Dependence and Ethical Use

While ChatGPT’s affordances support linguistic development, qualitative findings highlighted concerns about dependency and authenticity. Over 70% of participants admitted relying on AI to rephrase or generate sentences, and interview data revealed that many students copied AI-generated text directly, echoing findings by Chan and Hu (2023) and Tai et al. (2023). This suggests that although ChatGPT acts as a learning support, excessive dependence may hinder learners’ development of independent writing skills and critical thinking.

Ethical uncertainty also emerged as a key theme. Students expressed confusion regarding acceptable levels of AI use, which underscores the need for universities to establish clear institutional guidelines for academic integrity in the era of generative AI (Rudolph et al., 2023).

Balancing AI Support and Independent Learning

The study suggests a need to balance AI-assisted learning with autonomous skill-building. Students should be guided to use ChatGPT as a writing support tool rather than a content generator. As shown in Table 1, while AI contributes to linguistic refinement, it may limit creativity and critical engagement if not used reflectively.

Table 5.1: Pedagogical Balance in AI-Assisted Writing

Aspect	Benefits of ChatGPT	Risks and Challenges	Recommended Pedagogical Focus
Grammar & Vocabulary	Improves accuracy and range	Reduces independent editing	Encourage reflection on AI feedback
Coherence	Enhances paragraph organization	May promote formulaic writing	Combine AI examples with peer review
Creativity & Criticality	Provides structural guidance	Limits originality	Include tasks requiring personal opinion
Motivation	Boosts confidence	Creates over-reliance	Integrate AI use with teacher scaffolding

Educators should incorporate AI literacy training that emphasizes critical evaluation, paraphrasing, and responsible integration of AI-generated text. This aligns with Su et al. (2023), who advocate for guided ChatGPT integration to encourage reflective learning rather than passive acceptance.

Overall, ChatGPT positively influences ESL learners' writing by enhancing linguistic competence and reducing writing anxiety. However, its educational potential depends on how consciously and ethically it is integrated into instruction. The tool should serve as a collaborative writing partner, not a replacement for human reasoning or creativity. Future pedagogical frameworks must focus on developing AI literacy, ethical awareness, and autonomous writing skills to ensure that technology acts as a catalyst for, rather than a substitute for, language learning.

5. CONCLUSION

The present study investigated how AI tools such as ChatGPT influence ESL university students' academic writing skills at the South Eastern University of Sri Lanka. The findings revealed that ChatGPT plays a dual role in the academic writing process; serving as both a facilitator of linguistic development and a potential source of dependency. On one hand, the tool supports students in enhancing grammatical accuracy, vocabulary use, and organization of ideas; on the other, it risks diminishing students' originality, critical thinking, and autonomy when used uncritically. These findings align with prior research emphasizing both the pedagogical promise and the ethical challenges of integrating AI into higher education writing instruction (Barrot, 2023; Imran & Almusharraf, 2023; Su, Lin, & Lai, 2023).

Limitations of the Study

Despite providing valuable insights, this study faced several limitations. First, the research was conducted with a limited sample of 50 first-year ESL students from a single institution; the Faculty of Arts and Culture at the South Eastern University of Sri Lanka. As such, the findings cannot be generalized to all ESL populations or to other higher education contexts in Sri Lanka or beyond. A broader sample covering multiple universities or proficiency levels would offer more diverse perspectives on AI use.

Second, the study relied on self-reported data from questionnaires and interviews, which may have introduced subjectivity or social desirability bias. Some students might have overemphasized the benefits of ChatGPT or minimized its drawbacks to align with perceived academic expectations (Chan & Hu, 2023). Future studies could integrate longitudinal or observational data to capture more authentic patterns of AI engagement.

Third, the writing sample analysis was limited to short compositions. While this allowed manageable data collection, it might not fully reflect how students use ChatGPT in extended academic tasks such as essays or research reports. Moreover, the study did not measure long-term language gains, leaving open questions about sustained improvement and independent skill development.

Lastly, technological limitations; such as inconsistent access to the internet and varying familiarity with AI tools; might have influenced students' experiences and responses, especially in low-resource educational settings typical of Sri Lanka (Marzuki et al., 2023).

Significance of the Study

Despite these limitations, this research offers significant pedagogical and theoretical contributions. It provides one of the earliest empirical insights into how Sri Lankan ESL undergraduates interact with generative AI tools in academic writing. The findings extend existing scholarship on AI-assisted writing (Barrot, 2023; Fitria, 2023) by situating it within a developing country and bilingual education context, where technological literacy and language proficiency are still emerging.

Pedagogically, this study underscores the need for AI literacy integration in ESL instruction. Teachers should train students not only in how to use ChatGPT but also in how to critically evaluate, edit, and contextualize AI-generated content. The study also highlights the necessity of revising academic writing curricula to balance technological support with cognitive engagement and ethical awareness (Rudolph, Tan, & Tan, 2023).

At a broader institutional level, this research contributes to ongoing discussions about academic integrity in the age of generative AI. As universities worldwide grapple with how to manage AI use, these findings can guide policymakers in formulating responsible-use guidelines that preserve both creativity and honesty in academic writing.

Recommendations for Future Research

Given the evolving nature of AI technology, future research should adopt longitudinal and experimental designs to measure how sustained use of ChatGPT influences ESL learners' independent writing competence over time. Comparative studies could also examine the effects of different AI tools (e.g., Grammarly, Wordtune, or Bard) on writing development to identify which features most effectively promote linguistic and cognitive growth (Rad et al., 2023; Zhao, 2022).

It is also recommended that future studies explore the teacher's role in mediating AI-assisted writing. Understanding how instructors guide students in integrating AI feedback responsibly could provide valuable insights for pedagogical design. Mixed-method studies involving teachers and students would offer a more holistic understanding of AI's educational implications.

Furthermore, cross-cultural studies are needed to examine whether perceptions and impacts of ChatGPT differ across contexts such as South Asia, East Asia, and Western universities. Such comparisons could reveal how sociolinguistic and educational factors shape learners' adoption and attitudes toward AI-based learning tools (Chan & Hu, 2023).

Finally, future research should investigate ethical literacy and policy development in higher education. As AI becomes embedded in academic practice, universities must address issues such as authorship, plagiarism detection, and fairness in assessment. Scholars like Tai et al. (2023) emphasize that cultivating ethical awareness among both students and educators will be key to ensuring AI remains a pedagogical ally rather than a threat to academic values.

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