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Cognitive Reliance on Generative AI Feedback for Academic Writing among English Language Students at Lagos State University

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Abstract

Students' approaches to academic writing have changed as a result of the rapid use of generative AI tools in higher education. English as a foreign language learners are increasingly using tools like ChatGPT, Grammarly, and other AI-powered writing tools because they offer immediate feedback on grammar, coherence, vocabulary, and structure. Although there are obvious advantages to these tools in terms of efficiency and accessibility, worries regarding students' increasing cognitive dependence on AI systems and potential decline in their ability to write independently have started to emerge. This study examined cognitive reliance on generative AI feedback for academic writing among part-time English Language students at Lagos State University's Federal College of Education, Oyo Study Centre. A descriptive survey research design was employed, and data were collected from 100 purposively selected 300-level and 400-level students using a validated, reliable questionnaire (Cronbach's $\alpha = 0.79$). Results showed that ChatGPT (92%) and Grammarly (88%) were the most commonly used AI tools. The extent of AI usage was moderate-high (overall mean = 3.21 on a 4-point scale), with students using AI more frequently for surface-level tasks (grammar, vocabulary, paraphrasing) than for higher-order tasks (argument development, citation). Cognitive reliance on AI feedback was also moderate-high (overall mean = 3.05), indicating that students depend considerably on AI for error identification and grammar correction while maintaining only moderate critical evaluation. Perceived benefits were high (overall mean = 3.46), particularly for grammatical accuracy (3.61), vocabulary enhancement (3.55), and writing speed (3.52). However, students acknowledged significant challenges, including reduced independent error detection and plagiarism concerns. The study concludes that while generative AI offers valuable support for ESL academic writing, its uncritical adoption fosters cognitive reliance that may undermine independent writing competencies. The study recommends AI literacy training and institutional guidelines for responsible AI use in academic writing.

Keywords: Generative AI, cognitive reliance, academic writing, EFL students, AI feedback

Introduction

Writing is a fundamental communication skill that enables individuals to express ideas, share knowledge, and communicate experiences in a structured and meaningful way. It involves the organisation of thoughts, information, and arguments in forms that can be clearly understood by others. Within educational settings, writing occupies a central role because it serves as one of the major means through which teaching, learning, and assessment are carried out. Students are frequently required to engage in various writing activities such as note-taking, assignments, essays, examinations, reports, seminar papers, and research projects. Through these tasks, they are expected not only to reproduce information but also to analyse concepts, develop arguments, and communicate ideas logically and coherently.

Academic writing is particularly important in higher education because it supports students' intellectual development and academic success. At the university level, students are expected to engage in independent learning, critical thinking, and scholarly communication. They are often required to synthesise information from multiple sources, evaluate evidence, and present ideas using appropriate academic conventions. According to Apata and Oyedele (2025), academic writing enables students to participate in academic discourse, share disciplinary knowledge, and deepen their understanding of their fields of study. In classroom settings, students rely on writing to record lecture notes, summarise important concepts, and organise information for future learning. During examinations and assignments, writing becomes the primary means through which students demonstrate their understanding of course content. Consequently, students who possess strong academic writing skills are often better positioned to succeed academically than those who struggle to communicate their ideas effectively.

Proficiency in academic writing extends beyond the ability to construct grammatically correct sentences. It involves the effective use of vocabulary, punctuation, sentence structure, coherence, cohesion, argument development, referencing conventions, and appropriate academic tone. Khumalo & Maphalala (2018) explains that academic literacy requires students to engage in writing practices that reflect the linguistic, social, and disciplinary conventions of their academic fields. Students who possess these competencies are often able to communicate complex ideas clearly and participate effectively in academic discussions. However, students with weak writing abilities may

IJOGSE2026

struggle to express their knowledge adequately even when they understand the course content.

Despite its importance, academic writing remains a major challenge for many students, particularly those learning English as a second language. Writing often demands greater cognitive effort than other language skills because students must generate ideas, organise information, and translate thoughts into coherent written expressions simultaneously. Haerazi and Irawan (2019) observe that writing is often more difficult to master than speaking because it requires knowledge of linguistic structures and contextual appropriateness. Similarly, Alameddine and Mirza (2016) note that students frequently struggle with generating ideas and organising them into coherent academic texts. Many students experience difficulties related to grammar, vocabulary selection, sentence construction, paragraph development, referencing, and maintaining clarity throughout their writing.

In addition to linguistic challenges, students are often expected to meet strict academic standards such as originality, critical analysis, proper referencing, and formal writing conventions. They are frequently required to complete multiple writing tasks within limited timeframes, which may result in stress, anxiety, and reduced confidence in their writing abilities. Nkwoku and Okpala (2025) identified unstable motivation and low self-efficacy as major factors affecting students' academic writing performance. As a result of these challenges, many students seek alternative forms of academic support to improve their writing performance and meet institutional expectations.

The advancement of digital technologies has introduced new forms of writing support for students. In recent years, artificial intelligence tools have become increasingly popular because of their ability to provide immediate assistance in writing tasks. These tools assist users with grammar correction, vocabulary improvement, paraphrasing, idea generation, sentence restructuring, and content organisation. According to Idowu (2025), AI-powered tools such as language models, virtual assistants, and tutoring systems help students improve writing performance, critical thinking, and problem-solving abilities.

The emergence of generative artificial intelligence has further transformed academic writing practices in higher education. Tools such as ChatGPT, Gemini, Grammarly, Microsoft Copilot, and other intelligent writing systems are increasingly used by students for academic tasks. These tools can generate ideas, draft paragraphs, refine

IJOGSE2026

sentence structure, suggest vocabulary choices, and offer feedback on clarity, coherence, and tone. Unlike traditional writing support tools, generative AI systems produce interactive and context-sensitive responses that allow students to revise their work more efficiently. Studies have shown that students increasingly adopt these tools because they perceive them as convenient, fast, and effective for improving academic performance (Kasneci et al., 2023; Farrokhnia et al., 2026).

Generative AI feedback refers to the automated responses generated by artificial intelligence systems to enhance written texts. Such feedback may include grammar correction, paraphrasing suggestions, organisational guidance, tone adjustment, referencing assistance, and prompts for stronger argument development. Many students now consult AI tools before submitting assignments, essays, reports, and research papers. For students who experience difficulties with academic writing, these tools often appear to provide quick and reliable academic support.

Although generative AI offers significant benefits, its increasing use has raised concerns about students' dependence on these technologies. One major concern is cognitive reliance, which refers to the extent to which individuals depend on external systems to perform mental tasks such as planning, evaluating, remembering, decision-making, and problem-solving. Risko and Gilbert (2016) describe this phenomenon as cognitive offloading, where individuals transfer mental responsibilities to technological systems. In academic writing, cognitive reliance occurs when students depend excessively on AI-generated suggestions rather than engaging in independent thinking, self-editing, and critical evaluation.

This concern is particularly important among English Language students whose discipline requires strong writing proficiency, language awareness, and independent textual analysis. Excessive reliance on generative AI feedback may weaken students' writing competence by limiting opportunities for critical thinking, creativity, and self-correction. While responsible use of AI may improve writing efficiency, excessive dependence may undermine the development of essential academic writing skills.

The issue becomes more relevant within Nigerian universities where students increasingly have access to smartphones, internet connectivity, and AI-powered applications. Lagos State University provides an appropriate context for examining this issue because students are increasingly exposed to digital technologies for academic purposes. Despite the growing use of generative AI tools among university students,

IJOGSE 2026

limited empirical studies have examined cognitive reliance on generative AI feedback for academic writing among English Language students in Nigeria.

This gap in the literature creates the need for empirical investigation. Understanding whether students use AI as a learning support tool or as a substitute for independent thinking is important for educators, curriculum planners, and institutional policymakers. It is against this background that this study examines cognitive reliance on generative AI feedback for academic writing among English Language students at Lagos State University.

Statement of the Problem

Academic writing is a key tool for communicating knowledge and evaluating learning. It continues to be a basic requirement for students in higher education. Academic writing is tested through essays, assignments, tests, reports, seminar presentations, and research projects where university students are required to show that they understand course content. This aspect heavily emphasizes grammar, discourse, critical analysis, language use, and successful communication. As a result, students are expected to acquire exceptional writing proficiency that demonstrates creativity, coherence, clarity, and critical thinking.

Despite the significance of academic writing, students still struggle to write high-quality academic papers. Academic writing can be challenging for students due to issues such as poor language usage, limited vocabulary, poor organisation of ideas, difficulty in developing arguments, poor referencing skills, and time management. Students who are required to do several writing assignments in a short amount of time are more likely to have these difficulties. In light of this, a lot of students look for other ways to help them reach academic standards and write better.

The emergence of generative artificial intelligence tools such as ChatGPT, Grammarly AI, Quillbot, Gemini, and similar writing assistants has provided students with immediate access to writing support. These technologies can generate ideas, correct grammatical errors, suggest improved language, rearrange sentences and paragraphs, and offer feedback on coherence and clarity. As a result, a lot of students now use these writing tools to write their essays, assignments, projects, and research papers. The application of generative AI has sparked concerns about students becoming overly reliant on automated feedback systems, despite its potential to increase writing productivity and reduce the burden of academic assignments.

IJOGSE 2026

Cognitive reliance is one of the significant issues surrounding the application of generative AI in academic writing. When students rely more and more on outside technology to carry out mental tasks that they should be able to do on their own, like idea generating, critical thinking, editing, decision-making, and problem-solving, this is known as cognitive reliance. Students' writing proficiency, capacity for independent thought, inventiveness, and problem-solving abilities may progressively deteriorate if they routinely accept AI-generated recommendations without critically analysing them. For English language learners whose academic field demands proficiency in writing and language-related skills, this issue is especially crucial.

Few empirical studies have explicitly examined the degree to which students cognitively rely on generative AI feedback for academic writing, especially in the context of Nigerian higher education, despite the fact that numerous studies have looked at the advantages and difficulties of artificial intelligence in education. More precisely, despite students' growing access to AI tools, few studies concentrate on English language learners at Lagos State University. This creates a gap in knowledge regarding how these students use AI feedback and whether such usage supports or undermines the development of their academic writing abilities. It is in light of this that this study examines cognitive reliance on generative AI feedback for academic writing among English language learners at Lagos State University.

Objectives of the Study

The main objective of this study is to examine cognitive reliance on generative AI feedback for academic writing among English Language students at Lagos State University. Specifically, the study seeks to:

1. Determine the extent of generative AI usage for academic writing among English Language students at Lagos State University.
2. Assess the level of cognitive reliance on generative AI feedback for academic writing among English Language students.
3. Identify the types of generative AI tools commonly used by English Language students for academic writing tasks.
4. Examine the perceived benefits students derive from using generative AI feedback for academic writing

IJOGSE 2026

Research Questions

The following research questions will guide the study:

1. What types of generative AI tools do English Language students at Lagos State University commonly used for academic writing tasks?
2. What is the extent of generative AI usage for academic writing among English Language students at Lagos State University?
3. What is the level of cognitive reliance on generative AI feedback for academic writing among English Language students at Lagos State University?
4. What perceived benefits do English Language students derive from using generative AI feedback for academic writing?

Methodology

This study employed a descriptive survey research design. The descriptive survey design is appropriate for studies that aim to systematically describe variables of the study without manipulating them. The population of the study comprises part-time students of Lagos State University. A purposive sample method was used to select 100 participants from 300 and 400-level English language students. A self-made questionnaire created by the researchers served as the study instrument for gathering data. Five subsections made up the questionnaire. Section A sought the demographic information of the respondents, including gender, age, department, and level. Section B sought the use of popular AI generative tools for academic using a Strongly Agree, Agree, Disagree, and Strongly Disagree four Likert-type rating scales for its items. In Section C, questions about the extent of use of AI tools for academic tasks were posed to the respondents. Section D sought students' cognitive reliance on AI tools for writing. Section E sought the benefits of AI tools in academic writing. Experts in the English department, as well as educational technology, verified the instrument's face and content validity. To ascertain the instrument's dependability, a trial test was also conducted on it outside of the study's site. Questionnaires were administered in a physical class for convenience. Cronbach Alpha was used to determine the reliability of the instrument, yielding a coefficient of 0.79. Descriptive statistics such as frequency counts, percentages, mean, and standard deviation were used for data analysis. Descriptive statistics such as frequency count, percentage, mean, and standard deviation were used to analyse the data.

IJOGSE 2026

Results

Research Question One: What types of generative AI tools do English Language students at Lagos State University commonly use for academic writing tasks?

Table 1: Types of AI Tools Used by Respondents (N=100)

AI TOOL	FREQUENCY	PERCENTAGE
ChatGP T	92	92%
Grammarly	88	88%
Quillbot	76	76%
Gemini	45	45%
Microsoft Copilot	30	30%

Table 1 shows that ChatGPT and Grammarly, representing 92% and 88% respectively, were the most common Generative AI tools used among part-time English Language students at LASU Study Centre.

Research Question Two: What is the extent of generative AI usage for academic writing among English Language students at Lagos State University?

Table 2: Mean and Standard Deviation of AI Usage (N=100)

Items	Mean	SD	Interpretation
I use AI tools for grammar and punctuation errors	3.58	0.62	High
I use AI tools to enhance my vocabulary	3.51	0.68	High
I use AI tools to paraphrase	3.45	0.71	High
I use AI tools to detect spelling and typo errors	3.40	0.74	High
I use AI tools to improve my sentence construction	3.38	0.76	High
I use AI tools to check cohesion and coherence	3.21	0.81	Moderate High
I use AI tools for easy organisation of ideas	3.05	0.85	Moderate High
I use AI tools to generate ideas	2.98	0.89	Moderate High
I use AI tools for citation and referencing	2.82	0.94	Moderate High
I use AI tools for argument development	2.75	0.98	Moderate High
Overall Mean	**3.21**	**-**	**Moderate High**

Table 2 shows that there is a moderate-high rate of AI usage by students with an overall mean of 3.21, with high use of AI tools for grammar, vocabulary and paraphrasing, while moderate use for tasks like argument development and citation.

Research Question Three: What is the level of cognitive reliance on generative AI feedback for academic writing among English Language students at Lagos State University?

Table 3: Cognitive Reliance Mean Scores (N=100)

Items	Mean	SD	Interpretation
I prefer AI feedback over self-editing for grammar	3.42	0.70	High
I accept vocabulary suggestions without checking alternatives	3.28	0.78	High
I trust AI more than my own judgment	3.15	0.82	Moderate High
I rarely question AI corrections	2.95	0.88	Moderate High
I rely on AI to identify errors I would miss	3.31	0.75	High
I consciously evaluate AI suggestions	2.88	0.91	Moderate High
I accept incorrect AI suggestions sometimes	2.72	0.96	Moderate High
I feel uncomfortable without AI feedback	3.22	0.79	Moderate High
I use AI as a supplement	2.91	0.87	Moderate High
I can identify my own errors without AI	2.68	0.93	Moderate High
Overall Cognitive Reliance Mean	**3.05**	**-**	**Moderate High**

From Table 3, the overall mean of 3.05 indicates a moderate-high level of cognitive reliance. Students showed highest reliance on AI for grammar correction (3.42) and error identification (3.31), but maintained moderate critical evaluation.

Research Question Four: What perceived benefits do English Language students derive from using generative AI feedback for academic writing?

Table 4: **Table 4: Perceived Benefits Mean Scores (N=100)**

Items	Mean	SD	Interpretation
AI improves grammatical accuracy	3.61	0.58	High
AI enhances vocabulary use	3.55	0.62	High
AI increases my confidence in writing	3.48	0.69	High
AI helps me revise more frequently	3.39	0.72	High
AI helps speed up the writing process	3.52	0.65	High
AI helps understand error patterns	3.25	0.77	Moderate High
AI helps improve overall writing quality	3.44	0.68	High
Overall Benefit Mean	**3.46**	**-**	**High**

Table 4 indicate that students perceived high benefits from AI feedback, particularly in grammatical accuracy (3.61), vocabulary enhancement (3.55), and writing speed (3.52).

Discussion of Findings

The finding that ChatGPT and Grammarly were the most commonly used AI tools align with national trends in Nigerian universities. These findings were in accordance with the findings of Obura & Emoit (2024); Eke (2024) that students used AI-assisted writing tools, with ChatGPT and Grammarly being predominantly used. The higher

percentage in this study may reflect the part-time student context, where flexibility and immediate feedback are highly valued (Nwagbara, 2025).

The moderate to high overall usage extent indicates that part-time English Language students at LASU Study Centre are frequent users of generative AI for academic writing. The pattern of higher usage for surface-level tasks (grammar, vocabulary) than for higher-order tasks (argument development, citation) mirrors findings of Eke (2024), who noted that Nigerian students primarily use AI for assessment of academic journals and books in order to save time. This may also indicate early forms of cognitive reliance, where students depend on AI systems to perform information-search tasks that traditionally required independent library research and critical source exploration. Similar results were reported by Tunde-Awe (2024), who found Nigerian students used ChatGPT to a very great extent for essay completion but less for critical analysis.

The moderately-high cognitive reliance level indicates that students depend considerably on AI feedback, yet maintain some critical awareness. The finding that students trust AI more than their own judgment and feel uncomfortable without AI feedback reflects what Pitts et al. (2025) describe as overreliance accepting AI suggestions without sufficient scrutiny. However, the moderate score for consciously evaluating AI suggestions suggests elements of appropriate reliance (Pitts et al., 2025). The low score for independent error detection raises the concern about deskilling highlighted by Bia et al. (2023), which warns that habitual AI use can weaken memory consolidation and active engagement with writing.

High perceived benefits are consistent with experimental evidence. This findings corroborated with Mujeeb et al. (2026). They reported that AI feedback improved grammar by 43.5% and vocabulary by 37.3% among ESL students. The finding that AI feedback increases confidence and revision frequency aligns with Mekheimer (2025), who found that AI-assisted feedback reduced frustration and boosted a sense of accomplishment. Improved writing speed is a practical advantage for part-time students who often balance work and study (Arifayo, 2025). However, while students perceive high benefits in surface features, the moderate score for understanding error patterns suggests that AI may not deeply enhance metalinguistic awareness.

Conclusion

This study investigated the types, extent, cognitive reliance, and perceived benefits of generative AI feedback use among part-time English Language students at Lagos State

University's Federal College of Education, Oyo Study Centre. The findings revealed that ChatGPT and Grammarly are the most commonly used tools. Students use AI to a moderate-high extent, primarily for surface-level linguistic tasks. Cognitive reliance on AI feedback is moderate-high, with students showing greater dependence for error identification and less for critical evaluation. Perceived benefits are high, especially for grammatical accuracy, vocabulary, and writing speed. The study concludes that while generative AI offers valuable support for ESL academic writing, its uncritical adoption fosters cognitive reliance that may undermine the development of independent writing competencies. There is an urgent need for structured AI literacy interventions and institutional guidelines to promote responsible human-AI collaboration.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Lecturers in English Language and related disciplines should incorporate guided instruction on the ethical and effective use of generative AI tools in academic writing.
2. Lagos State University should organize workshops and training sessions to improve students' AI literacy and critical evaluation skills.
3. Academic writing assignments should be designed in ways that encourage originality, reflection, and independent reasoning rather than over-reliance on automated tools.
4. Students should be encouraged to use generative AI as a supportive tool rather than a replacement for their own thinking and writing processes.

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IJOGSE 2026

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IJOGSE 2026