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SYNTACTIC UNIFORMITY IN ESSAYS REWRITTEN BY CHATGPT

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Abstract: *the rapid integration of generative AI tools, particularly ChatGPT, in academic writing has raised questions about their impact on syntactic development and stylistic creativity among university students. This study investigates the degree of syntactic uniformity in essays rewritten by ChatGPT compared to human-authored compositions by first-year computer science students at Godfrey Okoye University, Nigeria. Anchored in Systemic Functional Linguistics (SFL), the research employs a corpus-based descriptive survey design to analyze sentence complexity, clause combination, and cohesion in 60 student essays and their AI-mediated rewrites. Findings reveal that ChatGPT-generated texts exhibit consistent syntactic patterns, higher use of subordinate clauses, and logical connectors, whereas human-authored essays demonstrate greater variability, stylistic experimentation, and context-sensitive cohesion. While AI rewrites enhance grammatical accuracy and structural clarity, they may constrain stylistic diversity and individual writing voice. The study underscores the pedagogical implications of AI-assisted writing, advocating for its use as a supportive tool to reinforce syntactic competence without diminishing students' creative expression. Recommendations include integrating AI in writing instruction while encouraging experimentation with complex sentence structures and rhetorical variation.*

Introduction

The rapid advancement of artificial intelligence (AI) has significantly impacted language production, particularly in academic writing. Among these innovations, ChatGPT, a generative AI language model, has gained prominence for its ability to produce coherent, grammatically accurate, and contextually relevant texts (Wu, 2025). Its widespread adoption in academic contexts has led to debates regarding its pedagogical benefits and potential drawbacks. While ChatGPT can assist students in generating

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ideas and refining their essays, its algorithmic nature raises concerns about the uniformity of sentence structures and repetitive syntactic patterns. These uniform structures, while error-free, may inadvertently limit students' creative expression and writing flexibility (Nkhobo & Chaka, 2023). Understanding these dynamics is essential, as writing proficiency is not solely about correctness but also about stylistic variety, rhetorical awareness, and the ability to convey nuanced ideas.

In the Nigerian academic context, first-year University students frequently encounter challenges in English essay writing, particularly in General Studies (GST) courses, which form the foundation of their communicative competence (Ismail, 2023). Many students exhibit inconsistent sentence construction, weak cohesion, and frequent grammatical errors in their essays, reflecting both developmental differences and varying levels of exposure to English. This variability makes it difficult for instructors to evaluate writing proficiency uniformly. With the growing availability of AI-assisted writing tools, students now have access to immediate linguistic support. However, the impact of such tools on the students' natural syntactic development remains underexplored (Bui, 2024). Investigating how AI-mediated rewrites influence syntactic patterns can illuminate whether such interventions enhance learning or reinforce formulaic approaches.

Syntactic uniformity refers to the degree to which sentence structures follow predictable or repetitive patterns across texts. Research has shown that AI-generated compositions often display a high degree of uniformity in the use of subordinate clauses, logical connectors, and cohesive markers (Moon, 2024; Georgiou, 2024). In contrast, human writing tends to demonstrate flexibility, with variations in sentence length, complexity, and stylistic approaches. The prevalence of uniform structures in AI-generated essays raises pedagogical questions: Does reliance on AI inadvertently encourage students to mimic these patterns rather than develop their own writing voice? Such concerns highlight the need for empirical studies examining AI's role in shaping students' syntactic competence.

The lack of grammatical, lexical, and orthographic mistakes, which also makes the texts intermediated by AI easy to read, can be considered as one of the most important strengths of ChatGPT (Raccuglia, 2025). Although this feature is useful in the production of polished essays, it conceals weaknesses in students on their knowledge of syntax rules or sentence variety. Human-composed essays however frequently bear the marks of developmental education in errors and experimentation that are essential to linguistic advancement. Excessive use of AI to rewrite may thus decrease the number of chances that will be available to students to practice these learning activities (Shalevska, 2025). Examining the syntactic structures in both AI-written and human-written essays, instructors can

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differentiate what AI is likely to assist them in and what may have been deterred by the introduction of AI.

The research on syntactic homogeneity is especially important to the first-year computer science students who have to use written communication often in the GST and technological classes. The students are supposed to write logically, be clear and concise but most have weaknesses when it comes to the use of cohesion of sentences and changes in grammatical structures. Incorrectness in sentence structure can make meaning incoherent, lose cohesiveness, and adversely impact academic performance. The exploration of AI-mediated rewrites can help the researcher conclude whether ChatGPT can be used as a scaffolding strategy to help with syntactic enhancement or it is largely used to reinforce formulaic writing.

Corpus-based investigations can provide a powerful way of investigating syntactic uniformity in that they can measure the use and patterns of sentence types, clause use and combination, and cohesive connections (Wu, 2025). The patterns of uniformity or variability can be determined objectively by comparing the results produced by human writers to those produced by ChatGPT in its attempts to rewrite them. In such a way, one may find empirical evidence and not rely on subjective measurements of writing quality. Furthermore, by the use of corpus-based techniques, it is possible to compare studies internationally, gaining an understanding of global and local tendencies concerning AI-assisted writing.

Besides seeking uniformity in syntax, the paper also focuses on lexical diversity and textual coherence which are essential elements of scholarly writing skills (Nkhobo & Chaka, 2023). AI-generated essays are generally shown to have the correct use of words, though no sense of contextual appropriateness. Although human essays are not free of making mistakes, it is not uncommon to find creative word usage and semantic connections implicit in human essays. The crucial aspect to know before curriculum designers plan to implement AI into writing instruction is this trade-off between grammatical correctness and stylistic complexity.

This growing trend of digitization in higher education in Nigeria has created a more convenient and attractive environment for AI-assisted writing for students (Ismail, 2023). ChatGPT can alleviate the mental drain that comes with essay writing and editing so the student may concentrate on the content. Yet the convenience of the texts created through AI prompts a need to consider them critically, lest they compromise genuine accomplishment of fluency in syntax and persuasive speech. That is why it is essential to discuss the impact AI has on syntactic uniformity and what the pedagogical implications are.

This study uses a case study approach to give a local context of the study of AI-mediated writing by looking at GST Use of English essays written by first-year undergraduate students of the

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computer science department of Godfrey Okoye University. A majority of existing literature focused on ambivalence has centered on East Asia or Western cultures, providing a shortage of empirical African-based data. Closing such a gap is critical to learning the applicability and influence of AI tools in the setting of Nigerian universities, where the majority of students learn English as a secondary language. At a minimum, the findings will be used to inform teachers on the need to make the best use of AI without undermining the linguistic creativity and growth of students.

Finally, the study aims to offer evidence-based recommendations for integrating AI into writing instruction while preserving syntactic diversity and stylistic growth. By identifying both the strengths and limitations of ChatGPT in rewriting essays, educators can design strategies that harness AI's benefits for error reduction and cohesion enhancement, while still encouraging students to develop original writing skills (Raccuglia, 2025). Such an approach ensures that AI serves as a supportive tool rather than a replacement for authentic language learning.

Objectives

1. To examine the degree of syntactic uniformity in essays rewritten by ChatGPT compared to human-authored essays by first-year computer science students.
2. To assess whether ChatGPT-mediated rewrites enhance or constrain syntactic complexity and stylistic diversity in GST Use of English essays.
3. To provide recommendations for integrating AI tools in English writing instruction while preserving students' linguistic creativity.

Theoretical Framework

This study is anchored in Systemic Functional Linguistics (SFL) theory (Halliday, 1994), which emphasizes the functional organization of language in context. SFL posits that language is a resource for meaning-making, serving three interrelated metafunctions: ideational, interpersonal, and textual. The ideational metafunction allows writers to encode experiences and represent reality, the interpersonal metafunction enables interaction with readers, and the textual metafunction organizes discourse for coherence and cohesion. Applying SFL to AI-mediated essay rewriting enables a systematic examination of how ChatGPT structures sentences, connects ideas, and maintains textual flow (Ismail, 2023). This perspective helps determine whether syntactic uniformity in AI-generated texts reflects functional optimization or reduces the richness of human-like writing. By framing the study within SFL, the research situates AI-generated language within a functional-linguistic paradigm, providing a robust lens for analysis.

SFL tools enable the study of the complexity of clauses, subordination, as well as thematic organization. Essays written by humans often have flexible use of presenting main and subordinate clauses, which allows flexible sentence format and appearance of stressors

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(Wu, 2025). On the one hand, the ChatGPT-composed text might also be systematic and follow the pattern, focusing on a particular form of clauses and transitions to avoid possible mistakes and highlight grammatical soundness and logical consistency. Investigating the strategies of clause combination allows evaluating the current research question on whether the AI production favors the same syntactic template usage rather than creativity in sentence formation. Additionally, the key to thematic development and information flow in SFL enables the researcher to assess the organization of knowledge by AI against the original essays by the students. This method will give insights into cognitive and stylistic variations concerning human and AI writing.

The theory additionally emphasizes the importance of language-based decisions in meaning-making. Along with terribles, nominalization, conjunctions, and referential markers enhance levels of not only grammatical accuracy but also coherence of text and stylistic variation (Georgiou, 2024). In rewriting mediated by AI, the repetitive employment of particular cohesive devices can increase readability but at the same time reduce the variety of syntax. The application of SFL gives a possibility to identify the patterns behind these linguistic decisions, and explain how they can be syntactically consistent, or is their syntactic regularity is purely conditioned by a style limitation of the algorithm operation. Knowledge of such dynamics is pertinent to the assessment of the roles played by ChatGPT in engaging with the written expression of students and facilitating, or limiting, syntactic creativity.

Moreover, SFL allows comparison at various levels of the grammar, sentence, clause combination, and progression of themes (Moon, 2024). The study will also be able to measure the difference in terms of syntactic uniformity, e.g., the ratio of simple, compound, and complex sentences, in both human-authored and AI-written essays with the help of SFL. It can also examine how ideas are structured in paragraphs and between essays, and show us whether the AI-mediated rewrites result in smooth predictable organisation or, as with humans, retain the variability that characterises it. This multifaceted analysis gives an all-encompassing representation of the effects of AI on scholarly writing and enables researchers to lend an educated recommendation in pedagogy.

Lastly, SFL theory has applied aspects in pedagogy, and it connects linguistic structures with educational results (Raccuglia, 2025). This can help teachers create educational interventions, which will ensure that ChatGPT-generated rewrites are balanced between AI-assistance and creative language production. As an example, learners can be advised to rely on AI in terms of grammatical correction and coherence by being told to explore more complex structural expressions and stylistic variation, nevertheless. The approach of including the analysis of SFL in an AI-aided writing instructional course guarantees that learners

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master both syntax and the flexibility of rhetoric. Finally, this theoretical option grounds SFL as a complement between the linguistic analysis and the pedagogical application and sets it as a good notion to assess the essay writing using AI by first-year computer science students.

Empirical Review

Wu (2025) performed a 4-dimensional analysis of the corpus based on the human and ChatGPT composition in terms of lexical difficulty, syntax complexity, cohesiveness, and error style. The study has examined 120 pieces by different authors at the levels of primary, secondary, and tertiary education with the use of quantitative measures to describe the structural distinctions. It was concluded that all ChatGPT-created texts displayed syntactic homogeneity, and the frequency of the use of subordinate clauses and logical connectors was high, in contrast to human-written essays, which also varied more by developmental stages. The authors underlined that even though compositions made by AI were grammatically accurate, they were unable to consider the particularities of writing development and contextual sensitivity. They suggested the use of AI as an adjunctive tool to the teaching of writing so that syntactic precision could be honed without AI replacing the human form of learning. The parallel to our present study is that it focuses on syntactic monotony in the AI-produced texts. The difference, however, lies in that Wu used a wide sample in the area of education in China, whereas the paper at hand concentrates on GST essays of first-year students in computer science in Nigeria.

Nkhobo and Chaka (2023) were able to compare discursive essays written by students and ChatGPT discussing the consistency between their structures and their fostering adaptability in various contexts. They evaluated linguistic characteristics like lexical diversity, syntactic complexity, and referential cohesion using a Coh-Metrix analysis. The results showed that the essays written using ChatGPT had a higher degree of structural consistency at the expense of adaptability to subtler subject matter, and could not therefore be expressed in different ways. The authors concluded that although AI may generate coherent and error-free texts, its dependence on the use of the same patterns limits originality in a particular context. They suggested that AI should be used in combination with the input of human feedback to ensure the retention of the critical thinking and creativity of the learners. The parallel with the discussed paper is that it focuses on the difference between AI uniformity and the diversity of humanity. The distinction lies in the fact that the previous research by Nkhobo and Chaka was interested in discursive essays in general, and the syntactic patterns in GST essay tasks performed by Nigerian students specifically are considered in the present study.

Ismail (2023) studied the topic of cohesion and coherence between essays written by ChatGPT and students at the university level. This study used a descriptive-analytic approach to explore

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logical connectors, referential markers, and thematic progression. Outcomes showed that AI-created texts significantly depended on straightforward logical connectors to create cohesion and human writers depended more on elusive semantic connectors and unspoken methods of cohesion development. The research came up with the conclusion that AI generates structurally coherent papers but does not necessarily reproduce the nuance of conversation between people. It was suggested that AI should be used to aid cohesion and leave room to foster the idea of stylistic flexibility in students. The parallel to the current research is that it pays attention to cohesion and syntactic structure in AI-assisted writing. The distinction is that in Ismail's study, the cohesion was measured in a general sense and the current study involves syntactic uniformity when compared to GST essay editing.

Bui (2024) tested the quality of academic essays produced with ChatGPT 3.5 on several topics and compared them to the texts written by the students. With quantitative measures of syntax, grammar, and reference combination, the study found systematic syntactic patterns in the AI outputs when compared to the variability of human compositions. Bui maintained that it is the regularity of the structure of AI that further encourages readability and grammatical correctness although it may diminish stylistic variety and creativity. The paper suggested to include AI tools as aid in as opposed to AI in text construction as a means of developing a critical approach to text building. The parallel with the present study is the comparison of syntactic structures in essays created by AI. The point is that the study conducted by Bui concerned various academic themes, whereas the present study is restricted to GST Use of English essays of first-year students in Nigeria.

Moon (2024) has conducted a study of the homogenizing influence of large language models on writing creativity and the impact AI has on syntactic diversity. The comparative research design revealed that AI-generated texts always showed a lesser degree of syntactic variation than those of human-written essays, which in many cases contained stylistic experimentations. Moon concluded that as long as AI ensures every sentence is grammatically precise, it limits the freedom of expression, which may influence the emergence of original writing skills. Such suggestions have included the incorporation of AI-based procedures with the incorporation of exercises that promote the drive toward syntactic diversity to strike a balance between precision and innovativeness. The parallel with the current work is the existence of a similarity in the composition or interest in the attenuation of syntactic diversity in AI-produced texts. It varies in the sense that Moon used the general creativity of writing, as opposed to the present study which deals specifically with syntactic uniformity in GST essays.

Raccuglia (2025) analyzed the impact of large language models on academic writing, focusing

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on predictable syntactic structures and stylistic innovation. Employing computational analysis, the study found that AI tools favored repetitive sentence patterns and standard clause combinations, limiting stylistic innovation. The study emphasized that while AI can enhance grammatical correctness, overreliance may undermine students' ability to construct varied and contextually nuanced sentences. Recommendations included structured pedagogical interventions to teach students how to use AI responsibly while preserving writing creativity. The similarity with the present study lies in evaluating AI's effect on syntactic uniformity. The difference is that Raccuglia's study considered academic writing broadly, whereas the current research examines a specific group of first-year computer science students in Nigeria.

Georgiou (2024) employed computational linguistic tools to differentiate human and AI-generated texts based on phonological, morphological, syntactic, and lexical features. The study identified structural uniformity as a prominent characteristic of AI-generated essays, contrasting with the greater variation in human writing. Georgiou concluded that while AI can produce highly consistent outputs, it may not fully emulate the nuanced syntactic strategies used by human authors. Recommendations included using AI outputs as reference points rather than models for student writing. The similarity with the present study is the focus on identifying syntactic uniformity in AI-generated texts. The difference is that Georgiou's work applied automated computational differentiation, while the current study combines corpus analysis with a pedagogical lens in the Nigerian context.

Shalevska (2025) compared sentence structures in human and AI-generated essays, analyzing proportions of simple, compound, and complex sentences. Findings revealed that AI essays contained a higher proportional use of simple sentences, reflecting a tendency toward uniformity and structural predictability, whereas human essays demonstrated more varied syntactic patterns. The study highlighted the potential pedagogical implications, suggesting that instructors guide students in developing syntactic flexibility even when using AI. The similarity with the present study lies in examining sentence-type distributions to assess syntactic uniformity. The difference is that Shalevska's research focused on general writing samples, whereas the current study investigates GST essays of first-year computer science students at Godfrey Okoye University.

Methodology

This study adopted a descriptive survey research design, employing a corpus-based approach to analyze syntactic uniformity in essays rewritten by ChatGPT. The population consisted of all first-year computer science students at Godfrey Okoye University, Enugu State, who had completed their GST Use of English essay assignments. A purposive sampling technique was used to select 60 essays that met the

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inclusion criteria: completion of the GST essay, clarity of topic, and legible submission. These essays were then submitted to ChatGPT for rewriting, generating a corresponding set of 60 AI-mediated texts.

Data collection involved obtaining both the original student essays and the ChatGPT-rewritten versions. A syntactic analysis of each essay was made in terms of sentence length, complexity of the clauses, amount of subordination and coordination in the sentences, the presence of connectors, and the ratio of simple, compound, and complex sentences. A coding scheme was constructed to code the type of each sentence and store the number of subordinate clauses, logical connectors, and reference markers. The research used Systemic Functional Linguistics (SFL) and considered it the broad conceptualization in determining the functional characteristics of sentences and the cohesiveness presented by any essay.

The simple percentages were used in quantitative analysis comparing the frequency of use of syntactic features in student-authored and ChatGPT-rewritten essays. As an illustration, on the one hand, the percentage of simple sentences in AI essays was estimated with the total number of sentences, and thus, in the same way, the percentage of compound and complex sentences. The frequency of connectors and cohesive devices was also counted in the study considering both sets of essays. The percentage derivation method enabled easy comparison and analysis of the trends of syntactic uniformity and variability.

Ethical considerations were observed throughout the study. Students' identities were anonymized, and permission was obtained from the university authorities to access GST essay assignments. Additionally, ChatGPT-generated essays were treated as supplementary research data, ensuring that no plagiarism or academic misconduct issues arose. The methodology ensured a systematic and transparent comparison between human and AI-mediated writing, while respecting academic integrity and confidentiality.

Data Analysis

Table 1: Syntactic Uniformity in Student and ChatGPT-Rewritten Essays

(Objective 1: To examine the degree of syntactic uniformity in essays rewritten by ChatGPT compared to human-authored essays)

Syntactic Feature	Student Essays (%)	ChatGPT Essays (%)	Interpretation
Simple Sentences	45	38	AI essays show fewer simple sentences, indicating systematic structuring.
Compound Sentences	30	27	AI essays maintain consistency, reducing variability slightly.

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Syntactic Feature	Student Essays (%)	ChatGPT Essays (%)	Interpretation
Complex Sentences	25	35	AI favors complex sentences more uniformly than human essays.
Subordinate Clause Usage	48	70	AI consistently applies subordination, increasing structural uniformity.
Logical Connector Usage	52	78	AI uses connectors frequently, enhancing cohesion but limiting stylistic flexibility.

Table 2: Syntactic Complexity and Stylistic Diversity
(Objective 2: To assess whether ChatGPT-mediated rewrites enhance or constrain syntactic complexity and stylistic diversity)

Feature / Measure	Student Essays (%)	ChatGPT Essays (%)	Interpretation
Lexical Accuracy	88	97	AI enhances grammatical correctness but may reduce creative expression.
Stylistic Variation	Moderate	Low	Human essays show higher variability; AI essays are more formulaic.
Proportion of Complex Sentences	25	35	AI increases complex sentence usage uniformly, limiting individual stylistic choices.

Table 3: Pedagogical Implications and Recommendations
(Objective 3: To provide recommendations for integrating AI tools in English writing instruction while preserving students' linguistic creativity)

Focus Area	Observation / Finding	Recommendation
Use of AI for grammar and cohesion	ChatGPT produces grammatically correct and cohesive essays	Use AI as a supportive tool, not a replacement for human writing
Impact on syntactic creativity	AI essays are structurally uniform and formulaic	Encourage students to experiment with diverse sentence structures

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Focus Area	Observation / Finding	Recommendation
Instructional strategy	Students may rely on AI outputs for essay writing	Design exercises that combine AI assistance with guided practice in stylistic variation
Curriculum integration	AI supports accuracy but may limit flexibility	Include modules on clause variation, complex sentences, and cohesion devices alongside AI use

Discussion of Findings

The present study investigated syntactic uniformity in GST Use of English essays of first-year computer science students at Godfrey Okoye University, comparing student-authored texts with ChatGPT-rewritten versions. The findings reveal that AI-mediated rewrites exhibit higher syntactic uniformity than human-authored essays, confirming patterns observed in prior research. For instance, Wu (2025) found that ChatGPT-generated texts consistently applied subordinate clauses and logical connectors across educational levels, whereas human-authored essays displayed greater syntactic variability. Similarly, in this study, ChatGPT rewrites had 70% of sentences containing subordinate clauses and 78% using explicit connectors, compared to 48% and 52% in student texts, respectively (Table 1). These results indicate that AI reliably produces structurally coherent texts but at the cost of individual stylistic variation.

Consistent with Nkhobo and Chaka (2023), who reported that ChatGPT-generated discursive essays maintained high structural consistency but were less adaptable to nuanced topics, this study observed that AI rewrites constrained stylistic flexibility in GST essays. While students' original texts included more diverse sentence types—simple, compound, and complex sentences—the AI rewrites favored a predictable pattern, particularly in complex sentence usage (35% in AI essays vs. 25% in student essays). This supports the view that AI-mediated writing can improve grammatical accuracy while limiting rhetorical creativity.

Cohesion and coherence patterns also align with findings by Ismail (2023), who highlighted that AI-generated texts rely heavily on explicit logical connectors, while human writers use more implicit semantic links. In the present study, ChatGPT rewrites showed consistent use of connectors such as "therefore" and "in addition" (78% of sentences), whereas students employed a mix of explicit and implicit devices (52% of sentences). This suggests that while AI enhances textual cohesion, it may suppress nuanced semantic strategies, reducing the learner's opportunity to experiment with stylistically flexible structures.

The findings further corroborate Bui (2024) and Moon (2024), who emphasized that AI-

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generated essays exhibit systematic syntactic patterns and reduced diversity, respectively. In this study, lexical accuracy was higher in AI rewrites (97%) compared to student essays (88%), reflecting AI's strength in producing grammatically correct outputs. However, the uniform application of subordinate clauses and connectors indicates a trade-off: AI enhances correctness but constrains syntactic creativity.

Moreover, the study aligns with Raccuglia (2025) and Georgiou (2024), who noted that AI's preference for repetitive sentence patterns limits stylistic innovation. ChatGPT-rewritten essays in this research demonstrated formulaic structures that may not reflect the authentic variability of student writing. Similarly, Shalevska (2025) reported that AI outputs have higher proportional use of simple sentences, reflecting structural predictability. In the current study, the use of complex sentences saw larger usage in AI essays but overall sentence type diversity was reduced compared with student-authored texts, further supporting homogenizing by large language models.

Collectively, the results indicate that ChatGPT may be an effective pedagogical tool to improve grammatical accuracy, cohesion, and sentence complexity. Nevertheless, overdependence on AI can suppress the acquisition of stylistic freedom, critical reflection, and experimentation with syntax that are necessary in becoming a competent writer of academic writing. The experiences echo the existing opinion in other studies that AI must act in support of human learning, not as a substitute part of writing instruction.

Overall, the results of the present study regarding ChatGPT-generated rewrites and the effects of the process on the structural coherence and correctness of student writing as well as the variability and stylistic richness of writing echoes the findings and conclusions of the empirical studies of Wu (2025), Nkhobo and Chaka (2023), Ismail (2023), Bui (2024), Moon (2024), Raccuglia (2025), Georgiou (2024), and Shalev This emphasizes the role of balanced AI integration where students obtain the advantages of AI-guided accuracy and, at the same time, retain the possibilities of creative and situational use of language.

Recommendations

1. Educators should integrate AI tools like ChatGPT as supplementary aids, emphasizing their role in grammar correction rather than stylistic modeling.
2. Curriculum designers should include exercises that encourage syntactic variation, balancing AI-mediated writing with human-authored tasks.
3. Students should be trained to critically evaluate AI-generated outputs, focusing on diversity of sentence structuresand cohesive strategies.
4. Further research should explore the long-term impact of AI-assisted writing on syntactic competence in Nigerian university contexts.

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