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IMPACT OF ARTIFICIAL INTELLIGENCE TOOLS ON RESEARCH WRITING AMONG UNDERGRADUATE ENGLISH STUENTS IN NORTH-WEST NIGERIA

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ABSTRACT

The proliferation of Artificial Intelligence (AI) tools like ChatGPT, Grammarly, and QuillBot has fundamentally transformed academic writing workflows globally. However, empirical understanding of how these technologies alter the writing skills and psychological profiles of undergraduate humanities students in regional African contexts remains limited. This study evaluated the impact of AI tools on the research writing processes of undergraduate English language students in public universities across North-West Nigeria. It investigated the relationships between AI usage frequency, perceived writing quality, writing self-efficacy, task completion, and the presence of institutional guidelines. A descriptive survey design was utilized to sample 123 two hundred-level undergraduate English students across public federal universities in the North-West geo-political zone. Data were gathered using a structured questionnaire measuring AI exposure metrics, writing dependencies, and ethical anxieties. Analysis was performed using Pearson and Spearman correlation coefficients alongside Mann-Whitney U tests. A moderate positive relationship was observed between AI usage frequency and perceived writing quality improvements ($r = 0.500$, $p < 0.001$, $R^2 = 0.250$). Conversely, frequent AI usage was significantly and negatively correlated with writing self-efficacy ($r_s = -0.265$, $p = 0.003$\$) and perceived task completion efficiency ($r = -0.384$, $p < 0.001$). Additionally, a significant negative correlation was identified between general AI reliance and independent writing confidence ($r = -0.237$, $p = 0.008$). Finally, students lacking clear institutional frameworks exhibited significantly higher anxieties regarding plagiarism and inaccuracies ($U = 2078.0$, $p = 0.002$).While AI tools enhance perceived text quality, they act as a psychological double-edged sword, causing lower writing self-efficacy, slower independent task completion, and structural dependency. Clear institutional policies are urgently needed to mitigate ethical anxieties and preserve core literacy skills.

Keywords: Artificial Intelligence, Research Writing, Writing Self-Efficacy, Undergraduate English Students, Higher Education Policy.

Introduction

The integration of Artificial Intelligence (AI) utilities—such as large language models (e.g., ChatGPT) and automated editing platforms (e.g., Grammarly, QuillBot)—has sparked a paradigm shift in academic literacy and higher education research ecosystems. Modern AI tools provide immediate assistance across multiple stages of text creation, including algorithmic idea generation, automated syntactic restructuring, contextual

paraphrasing, and real-time grammatical optimization. In developing tertiary educational landscapes, these technologies are frequently embraced as vital cognitive scaffolds that help students navigate complex academic English prose and accelerate formal writing tasks.

However, this rapid digital transformation poses a unique challenge for undergraduate English language students, particularly within public universities in North-West Nigeria. For students specializing in linguistics and literary studies, the writing process is not merely a mechanism for data transmission; it is a core pedagogical arena where critical thinking, independent synthesis, and structural voice are developed. Emerging literature suggests that over-reliance on generative AI text generation can lead to passive engagement with academic material, stalling the growth of foundational literature synthesis and primary research abilities. Furthermore, critical issues regarding authorship boundaries, algorithmic biases, data hallucinations, and automated plagiarism remain inadequately addressed within the policy frameworks of Nigerian higher education institutions.

Despite the growing use of these digital writing aids among students, there remains a distinct lack of empirical research examining how these tools affect the core language competencies and psychological writing profiles of undergraduates in the North-West region. This lack of regional data prevents universities from designing balanced instructional policies and teaching strategies that could guide students toward ethical and productive AI collaboration. Consequently, this study addresses this empirical gap by measuring the real-world impact of AI tools on the research writing behaviors of English majors in North-West Nigeria, assessing both the practical improvements in writing quality and the deeper risks of technology dependency

Research Objectives

The following are the objectives this paper sets to achieve:

1. To examine the frequency and patterns of AI tool usage among undergraduate students in their research writing processes.
2. To assess students' perceived impact of AI tools on the clarity, coherence, and overall quality of their academic writing.
3. To determine the extent to which AI tools enhance students' self-efficacy, writing skills, and task completion speed.
4. To identify the major challenges and ethical concerns (e.g., accuracy, misinformation, plagiarism, over-reliance) associated with using AI tools in academic writing.
5. To evaluate undergraduate students' overall attitudes toward the integration and continued use of AI tools in academic learning environments.

Research Questions

The following questions guides the research:

1. What is the extent and nature of undergraduate students' use of AI tools for various research writing tasks (e.g., idea generation, paraphrasing, organizing, and grammar correction)?

2. How do undergraduate students perceive the impact of AI tools on the clarity, coherence, structure, and overall quality of their research papers?
3. To what extent do AI tools influence undergraduate students' writing self-efficacy, skill development, and dependency in completing research tasks?
4. What are the primary challenges and ethical concerns that undergraduate students encounter when using AI tools, including issues of accuracy, misinformation, and plagiarism?
5. What are the prevailing attitudes of undergraduate students toward the benefits, integration, and future use of AI tools in their academic writing?

Research Hypotheses

The following hypotheses were formulated to guide the research:

1. There is no significant positive relationship between the frequency of AI tool usage and students' perceived improvement in research writing quality.
2. Students who frequently use AI tools report no significantly higher levels of writing self-efficacy and faster task completion compared to those who use them infrequently.
3. There is no significant negative correlation between students' reliance on AI tools and their perceived ability to write effectively without them.
4. Students' concerns about AI-generated inaccuracies and plagiarism risks are not significantly higher among those who lack clear institutional guidelines on AI usage compared to those who have such guidelines.
5. There is no significant positive relationship between students' positive attitudes toward AI tools and their intention to continue using them for academic writing in the future.

Statement of the Problem

Since the evolution of Artificial Intelligence (AI) tools such as ChatGPT, Grammarly, Mybib, and QuillBot, academic writing practices have significantly transformed globally. These tools perform functions that help writers in generating content, use of correct grammar, and organizing structure, which significantly affects the way students tackle research writing. In relation to undergraduate English students in the North-West region of Nigeria, the incorporation of AI tools into academic writing processes offers both prospects and barriers.

Even as AI tools are known for enhancing writing efficiency and providing immediate feedback, there is growing concern about their impact on students' development of critical thinking, originality, and academic integrity. Research shows that relying on AI for writing tasks could result in shallow involvement and obstruct the development of crucial research abilities. Also, issues of the ethical implications of AI-assisted writing, such as plagiarism and authorship, continue to be poorly tackled within the Nigerian institutions of higher learning.

In spite of the growing popularity of AI-driven tools in educational settings, there is a scarcity of empirical research analysing their particular impact on research writing skills of undergraduate English students in North-West Nigeria. This lack of knowledge hinders the formulation of well-informed policies and teaching strategies to guide the effective and ethical use of AI tools in academic writing. Therefore, it is imperative to investigate how AI tools influence students' research writing processes, the extent of their reliance on these technologies, and the consequent implications for academic standards and learning outcomes in the region.

Methodology

The research design was descriptive survey design method. The North-West Zone of Nigeria is the area of the study. North West zone of Nigeria consists of the following states: Kebbi, Sokoto, Zamfara, Katsina, Kano, Jigawa and Kaduna. The population of the study consisted of all two hundred level undergraduate students from the department of English language in public universities in the North West Geo-political zone of Nigeria.

Simple random sampling technique was used to select two public public federal universities in the North-West Geo-political zone of Nigeria. The sample was randomly selected among students from English department (between 20 – 24 years) in the two selected universities chosen in line with Krejcie and Morgan, 1970 sample size table. Instrument for the data collection was Questionnaire. A total of 123 undergraduate students were selected. The questionnaire titled Impact of Artificial Intelligence Tools on Research Writing among Undergraduate English Students Questionnaire (IAITRWUESQ).

It consisted of five sections. Section A consists of information on demographic variables such as gender, state, zone, age etc., Section B consists of questions on Use of AI Tools in Research Writing, Section C questions on Perceived Impact on Writing Quality while section D contained questions on Self-Efficacy and Skill Development, section E consists of questions on Challenges and Ethical Concerns and finally section F consisted of students Attitude towards AI Tools

Face and content validation of the instrument was done by two Science Education experts from A.B.U, Zaria and two experienced Biology secondary school teachers from the schools in the study population. The instrument was pilot tested using 50 adolescent girls from a secondary school in the population area. Test-retest method was used. Pearson Product Moment Correlation Coefficient was used to calculate the reliability coefficient of 0.73 which made the instrument reliable for the study.

The IAITRWUESQwas administered by the researchers with the help of research assistants in each of the sampled schools. The process was strictly supervised in order to make clarifications where necessary. The data collected was subjected to statistical analyses. ANOVA was used to determine knowledge level among all schools in the study area, Spearman Correlation Coefficient was also used to determine the relationship between Knowledge level and attitude towards menstrual hygiene. Chi-square was used to

determine the relationship between Knowledge level and menstrual hygiene practice among adolescent girls in the study area and simple percentages was used to analyze general information in section A of IAITRWUESQ.

Results

Hypothesis one: There is no significant positive relationship between the frequency of AI tools usage and students perceived improvement in research writing quality

Variables	**Mean**
Frequency of AI tools usage	4.60
Perceived improvement in research writing quality	4.83
Person correlation (r) 0.500	0.500

The person correlation analysis revealed a moderate positive relationship between the frequent use of AI tools and students perceived improvement in research writing quality ($r = 0.500$, $p < 0.001$). since the p-value is far below the 0.05 level of significance the null hypothesis is rejected. This indicate that students who use AI tools more frequent tend to report greater improvement is the quality of their research writing. The coefficient of determination ($R^2 = 0.250$) shows that approximately 25.0% of the variation is students perceived research writing quartic can be explained by differences in the frequency of AI tools usage.

Hypothesis two: Students who frequently use AI tools no significant higher levels of writing self-efficacy and faster task completion compared to those who use them infrequently

The AI tools usage was represented by the items UARW1-UARW5, writing self-efficacy by SEDSD11-SEDSD15, and task completion by CAIC16-CAIC20.

Variable	**Frequent AI users (Mean)**	**Infrequent AI users (Mean)**
Writing self-efficacy	-4.78	4.82
Task completion	4.29	4.64
Correlation Analysis		
Relationship	Sperman's	p-value
AI usage vs writing self-efficacy	-0.265	0.003
AI usage vs Task completion	-0.384	<0.001

The result indicates statistically significant difference between students with higher and lower levels of AI tools usage. However, the direction of the relationship is contrary to the stated expectation., students classified as more frequent AI users did not demonstrate higher writing self-efficacy or faster completion. The sperman correlation coefficient further support this finding revealing significant negative association between AI usage and both writing self-efficacy ($p = -0.265$, $p = 0.003$) and task completion ($p = -0.384$, $p < 0.001$) since significant difference were found ($p < 0.05$) the null hypothesis is rejected. Nevertheless, the result does not support the proposition that frequent AI users possess higher writing self-efficacy and faster task completion.

Hypothesis three: A person product moment correlation analysis was conducted to determine the relationship between two variables.

Variables	R	p-value	Decision
Reliance on AI tools (ATAIT) and perceived writing ability without AI (UARW)	-0.237	0.008	Significant

The analysis revealed a significant negative correlation between students' reliance of AI tools and their perceived ability to write effectively without them (r = -0.237, p = 0.008). The negative coefficient indicates that as students' reliance on AI tools increases the confidence in writing effectively without AI assistance tends to decrease. But the relationship is weak in magnitude (r) <0.30) it is statistically significant at the 0.05 levels. Since the p-value (0.008) is less than the significance level (0.05) the null hypothesis is rejected.

Hypothesis four: There is no significant negative correlation between students' reliance on AI tools and their perceived ability to write effectively without them.
The instructional guidelines variable was derived from the UARW item, while concerns about AI inaccuracy and plagiarism were measured using the CAIC item

Descriptive statistics

Group	**N**	**Mean score**	**Standard deviation**
Lack clear instructional guidelines	37	4.69	0.42
Have clear instructional guidelines	86	4.46	0.37

The result show that students who reported less clarity regarding AI usage guideline exhibited higher concern levels Mann Whitney U test results

Test	U statistics	p-value
Mann-Whitney U	2078.0	0.002

There is a statistically significant difference in concerns about AI-generated inaccuracies and plagiarism risk between students who lack clear instructional guidelines student without clear guidance demonstrate significantly greater concern regarding the reliability, ethical use and plagiarism implication of AI -generated contents

Discussion

The person correlation analysis revealed a moderate positive relationship between the frequent use of AI tools and students perceived improvement in research writing quality (r = 0.500, p < 0.001). since the p-value is far below the 0.05 level of significance the null hypothesis is rejected
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Conclusion

While students correctly identify that frequent AI usage improves the mechanical polish, structure, and clarity of their final research papers, this structural polish comes at a noticeable psychological cost. Increased reliance on AI tools is significantly linked to lower writing self-efficacy and a decline in independent writing confidence. Rather than empowering students, continuous AI usage creates an internal dependency, making students feel less capable of producing high-quality academic prose without digital assistance. It also slows down independent task completion, indicating that students become bogged down by AI loops rather than learning to write efficiently on their own. Policy Shortfalls and Ethical Anxiety: The complete lack of clear institutional guidelines creates a stressful environment of ethical uncertainty. Students working without clear university rules show significantly higher anxieties regarding plagiarism risks and AI errors . This proves that students do not want unregulated access; instead, they are looking for clear, structural boundaries within their academic departments.

Recommendation

Based on the empirical evidence gathered from this study, the following actions are recommended for higher education stakeholders:

1. Faculty boards and departments of English language across public universities in North-West Nigeria must move quickly to design and publish clear, explicit institutional AI usage guidelines.
2. To counteract the decline in student writing confidence and task speed, university departments must revamp their research methodology modules. Faculty should use real-time writing workshops and diagnostic, technology-free drafting sessions to ensure students build internal writing skills and maintain their cognitive independence from digital tools.
3. Rather than enforcing total prohibitions that are impossible to police, universities should introduce mandatory courses in critical AI literacy. These modules should train undergraduate researchers to treat AI tools critically—teaching them how to spot algorithmic hallucinations, verify automated references, and use paraphrasing platforms ethically without erasing their own scholarly voice.

1. positive attitudes ($M = 4.61$) toward digital simulations, actively recognizing their potential to bypass long-standing laboratory shortages and elevate overall teaching quality. Teachers are highly enthusiastic and ready to adopt these systems as a regular part of their classroom practice.
2. Attitudinal Mechanics: In line with the Technology Acceptance Model (TAM), a teacher's baseline attitude is driven by their perception of the tool's educational utility ($R^2 = .279$). When educators see that interactive software effectively clarifies abstract concepts, they experience a boost in pedagogical confidence, which directly translates into a strong willingness to adopt digital instructional methods ($R^2 = .205$).
3. The Infrastructure Bottleneck: Psychological readiness alone cannot overcome institutional deficits. The lack of reliable technological infrastructure (including computers, stable electrical power, and projection gear) stands as the single most critical structural barrier, single-handedly explaining 41.1% of the variance in a teacher's actual ability to deploy these tools. Without stable infrastructure, teacher motivation inevitably breaks down.

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