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Digital Writing Assistant Tools and Research Writing Effectiveness of Postgraduate Business Education Students in Rivers State Universities

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ABSTRACT

The study investigated Digital Writing Assistant and Research Writing Effectiveness of Postgraduate Business Education Students in Rivers State Universities. Two objectives, two research questions and two null hypotheses guided the study. The study adopted correlational study design. The total population of the study was 195. comprising of RSU 66 and IAUE 129. The sample size of the study consisted of the entire population of 195 respondents because, the population was manageable. Due to the small size of the population, there was no sampling. The data collection instruments for the study were two self-structured questionnaires titled "Digital Writing Assistant Tools Questionnaire (DWATQ) and Research Writing Effectiveness of Postgraduate Business Education Students Questionnaire (RWEPBESQ)". The instruments were designed on a 4- point rating scale with options of strongly Agree (SA- 4 point), Agree (A-3 point), Disagree (D-2 points) and Strongly Disagree (SDA – 1point) respectively. The instruments was face and content validated by three experts from the department of Business Education and the field of Measurement and Evaluation in Rivers State University, and tested for reliability using Cronbach Alpha statistics which yielded composite reliability index of 0.85 and 0.76 for the instruments. Out of 195 questionnaire distributed, 176 copies were retrieved and used for the study. Pearsons Product Moments Correlation Co-efficient (PPMC) was used to answer research questions and test the null hypotheses formulated at 0.05 level of significance. The study found that there is a strong significant relationship between Grammerly and research writing effectiveness of postgraduates Business Education students in Rivers State Universities, there is a moderate significant relationship between QuillBot and research writing effectiveness of postgraduates Business Education students in Rivers State Universities. Based on the finding of the study the researchers recommended amongst other that the University management should organize hand-on workshop on Grammarly for editing and improving grammatical accuracy of student report writing. Rivers State University/Management should provide institutional access by subscribing to QuillBot premium for all postgraduate students to bridge the digital divide.

Keywords: Effectiveness, Digital Writing Assistant, Postgraduate Business Education Students, Research Writing.

INTRODUCTION

Advance in internet technologies have fundamentally altered information acquisition, processing and application in education and research. Consequently, the development of these technologies has reshaped the mechanisms of knowledge production, accessibility and distribution in scholarly context. processing and application in education and research. Con Previously, students and researchers relied heavily on print-based resources and physical libraries, which often limited access to updated materials and slowed the research process. However, with the rise of internet resource tools, the information landscape has become faster, broader, and more interactive, enabling users to access real-time, diverse, and credible academic content.

Digital Writing Assistant Tools refers to the AI powered and software based applications designed to support, guide and enhance the process of academic writing (Koltorskaia, 2020). It is a web-based platforms, applications, or services that enable users to locate, evaluate, manage, and share information online, especially for academic or professional purposes (Obasi & Ezeani, 2021). These tools are essential in supporting digital literacy, scholarly communication, research collaboration, and academic writing among students and researchers. According to Ogunmodede, Olalekan, and Falaye (2022), Digital Writing Assistant tools include online search engines, digital libraries, citation and reference managers academic networking platforms, writing enhancement tools, and research assistance tools. These platforms help to bridge the information gap, reduce the time spent on manual research processes and provide access to current and credible scholarly materials. For this study, the researchers considered Grammarly and QuillBot.

Grammarly is a sophisticated digital writing assistant tool that leverages artificial intelligence (AI) and natural language processing (NLP) to help users improve the quality, clarity, and correctness of their written communication. It functions as a real-time proofreader, offering grammar, punctuation, and spelling corrections, as well as suggestions for style, tone, and conciseness (Choudhury & Bose, 2022). Grammarly is widely used by students, researchers, educators, and professionals to enhance their writing across various platforms including Microsoft Word, Google Docs, and web browsers. According to Al-Adwan et al. (2023), Grammarly has become an essential tool in academic writing, especially among non-native English speakers, as it provides contextual feedback that promotes independent learning and helps users develop their language proficiency. The tool goes beyond surface-level corrections by offering explanations for suggested changes, thus encouraging reflective revision and deeper understanding of English grammar rules. For postgraduate students, Grammarly serves a dual role: it supports the development of academic writing competence and acts as a self-directed learning resource. Ibrahim and Yusuf (2021) found that the adoption of Grammarly significantly improved the structure, coherence, and academic tone of students' research papers. Its plagiarism detection feature also helps in ensuring originality, which is critical for upholding academic integrity in thesis writing and scholarly publications.

Furthermore, Grammarly's integration with educational technologies and learning management systems (LMS) has contributed to its growing adoption in higher education. Institutions now recommend Grammarly to support students in developing the writing skills necessary for success in academic and professional settings. Obi and Eze (2022) emphasized that the tool is particularly valuable for business education students who are expected to produce formal documents such as reports, proposals, and policy briefs with precision and professionalism. Despite its advantages, some scholars argue that over-reliance on Grammarly may inhibit the development of critical editing skills. Kumar and Samuel (2023) caution that while Grammarly is a useful aid, it should complement, not replace, traditional writing instruction and personal editing skills. Educators are encouraged to integrate Grammarly into pedagogy while also teaching foundational writing competencies.

Grammarly is more than just a grammar checker it's an intelligent writing assistant designed to elevate the quality of digital writing across diverse contexts, including academia, business, and personal communication. Its sophisticated algorithms utilize artificial intelligence (AI) and machine learning (ML) to provide real-time feedback on grammar, punctuation, spelling, sentence structure, tone, and clarity. This makes Grammarly a versatile tool not only for correcting errors but also for enhancing the overall

coherence and professionalism of a document (Choudhury & Bose, 2022). In academic settings, Grammarly has proven especially beneficial to postgraduate students. These learners are often expected to produce research papers, dissertations, and journal articles that adhere to high standards of academic writing. For many, especially non-native English speakers, tools like Grammarly help bridge the gap between their language proficiency and the demands of scholarly communication (Al-Adwan et al., 2023). The tool provides contextual explanations, enabling users to understand the rationale behind suggested changes. This feature is particularly valued in educational contexts because it promotes learning through revision, rather than blind acceptance of corrections.

Additionally, Grammarly's plagiarism detection feature is a critical asset in promoting academic integrity. It checks written work against a large database of web pages and academic papers to identify unoriginal content. According to Ibrahim and Yusuf (2021), this helps postgraduate students ensure their work is original, properly cited, and compliant with institutional policies. From a pedagogical standpoint, Grammarly is also being integrated into digital literacy programs and learning management systems. Institutions are now encouraging its use as part of self-directed writing improvement strategies. For instance, Obi and Eze (2022) note that many Nigerian universities have adopted Grammarly as a recommended tool for Business Education students, particularly because these students are expected to communicate professionally in formal documents such as memos, proposals, and project reports.

However, not all feedback on Grammarly is wholly positive. Critics like Kumar and Samuel (2023) warn against over-reliance on automated tools. They argue that depending solely on Grammarly could hinder students' ability to independently develop editing and proofreading skills. Therefore, educators are advised to combine Grammarly with explicit instruction in writing and critical thinking, ensuring that students gain both technical support and foundational language knowledge. Grammarly supports academic success by improving writing accuracy, fostering independent learning, and enhancing research output. When used strategically, it contributes significantly to developing 21st-century communication and ICT skills among postgraduate students.

QuillBot is a widely adopted artificial intelligence (AI)-powered writing tool that assists users in paraphrasing, summarizing, and refining written text. Originally developed to help writers rephrase content for clarity and originality, QuillBot has grown into a multi-functional platform supporting academic writing, content creation, and language development. It is especially relevant in educational contexts, where it serves as a learning aid for students seeking to enhance the quality and originality of their writing. According to Wang and Liu (2023), QuillBot leverages advanced natural language processing (NLP) algorithms to restructure sentences while preserving meaning. It offers multiple writing modes such as Standard, Fluency, Formal, Creative, and Academic that allow users to customize outputs based on the intended tone and purpose. This versatility makes it particularly appealing to postgraduate students engaged in thesis writing, academic publishing, and content editing.

For non-native English speakers, QuillBot has been shown to be especially beneficial. Adeyemi and Okoro (2022) found that postgraduate students in Nigerian universities reported improved confidence in academic writing when using QuillBot to check for grammar, sentence variation, and coherence. The tool's interactive interface and real-time suggestions offer a low-pressure environment for learners to experiment with language and revise their work without external judgment. Additionally, Sharma and Khanna (2023) emphasize QuillBot's utility in addressing the challenge of unintentional plagiarism. When students paraphrase source materials without proper guidance, they may inadvertently replicate original phrasing. QuillBot's paraphrasing engine helps mitigate this by offering diverse alternatives and encouraging proper rewording. However, scholars caution that while QuillBot can assist in rephrasing, students must still ensure that all sources are cited appropriately to avoid ethical breaches in academic work.

In research environments, QuillBot is also valued for its summarization tool, which extracts key ideas from lengthy texts a function particularly useful during literature reviews or when dealing with dense academic articles. Ibrahim and Musa (2021) observe that tools like QuillBot can significantly reduce the time postgraduate students spend on initial writing tasks, allowing them to focus more on analysis and

synthesis of information. Despite its advantages, concerns persist regarding over-reliance. Oluwole and Adediran (2024) argue that excessive dependence on paraphrasing tools may hinder the development of critical thinking and original expression. They suggest integrating QuillBot into digital literacy programs, where its usage is guided by pedagogical frameworks aimed at promoting ethical and effective academic writing practices. QuillBot is a transformative digital writing tool in the context of higher education. Its growing adoption among postgraduate students reflects broader shifts in academic writing practices, where AI-assisted tools are becoming integral to knowledge production. When used responsibly and in conjunction with sound academic judgment, QuillBot can foster improved writing quality, reduce plagiarism, and support academic success.

The discussion so far revealed that the above tools offer advanced capabilities for literature discovery and collaborative research, yet their uptake remains poorly documented in local contexts, while the transformative potential of internet-based research tools for postgraduate education is widely acknowledged, their successful deployment within Rivers State's academic ecosystem is still a work in progress. Empirical evidence underscores the critical need for structured digital literacy initiatives, curriculum redesign, and policy-level commitments that promote equitable access to and mastery of these tools. Only then can the promise of digital transformation in Nigerian postgraduate education especially in Business Education disciplines be fully realized.

Statement of the Problem

In the contemporary academic environment, postgraduate research is increasingly shaped by the adoption and utilization of software internet resource tools that enhance efficiency, accuracy, and scholarly engagement. Among Business Education postgraduate students in Rivers State universities, the integration of digital tools such as Grammarly and QuillBot has become crucial for knowledge creation, academic writing, literature review, referencing, collaboration, and overall research productivity. These tools are designed to assist students in overcoming common research-related challenges such as grammatical errors, plagiarism risks, lack of access to quality scholarly materials, poor referencing skills, and limited collaborative opportunities.

Despite their relevance, there is a growing concern that postgraduate Business Education Students may not be effectively utilizing these tools to their full potential. For instance, while Grammarly and QuillBot are widely available for writing support and paraphrasing, many students still struggle with producing error-free and plagiarism-free academic work.

This situation poses a significant challenge to the academic and professional development of postgraduate students, especially in Business Education where employability competency, digital adaptability, and scholarly output are increasingly emphasized. If students fail to harness the potential of these tools, they risk producing substandard research, limiting their contribution to knowledge, and reducing their competitiveness in the global academic and professional landscape. There is a correlation between those who used Grammarly, and QuillBot and those who do not use them and their academic performance. Consequently, there is a pressing need to investigate the extent to which postgraduate Business Education students in Rivers State universities utilize digital writing assistant tools in their research, with specific focus on Grammarly and QuillBot.

Purpose of the Study

The purpose of this study was to Digital Writing Assistant Tools and Research Writing Effectiveness of postgraduate Business Education students in Rivers State universities. Specifically, the study sought to:

1. Determine how Grammerly relate with research writing effectiveness of postgraduate Business Education students in Rivers State Universities.
2. Ascertain how QuillBot relate with research writing effectiveness of postgraduate Business Education students in Rivers State Universities.

Research Questions

The following research questions guided the study:

1. How does Grammerly relates with research writing effectiveness of postgraduate Business Education students in Rivers State Universities.

2. How does QuillBot relates with research writing effectiveness of postgraduate Business Education students in Rivers State Universities.

Hypotheses

The following null hypotheses formulated were test at 0.05 levels of significance:

1. There is no significant relationship between Grammerly and research writing effectiveness of postgraduates Business Education students in Rivers State Universities.
2. There is no significant relationship between QuillBot and research writing effectiveness of postgraduates Business Education students in Rivers State Universities.

METHODOLOGY

The study adopted correlational research design. According to Ogwunte (2023), correlational research design aims to identify and analyse the relationship between two or more variables without manipulating them. The study was conducted in Rivers State Universities (RSU) and Ignatius Ajuru University of Education (IAUE). The population of this study comprised 195 postgraduate students enrolled in Business Education programmes (MEd, MS.c. & PhD) during the 2025/2026 academic session at Rivers State University and Ignatius Ajuru University of Education, all in the Faculty of Education. The breakdown of population is shown in Table 1 below:

Table 1: Population of Distribution Table

S/N	Institution	postgraduate Business Education		GRAND TOTAL
		M.Ed/ M.Sc	**Ph.D**	
1	Rivers State University	46	20	66
2	Ignatius Ajuru University of Education	81	48	129
	TOTAL	**127**	**68**	**195**

Source: Exams and Record unit (RSU & IAUE)

The entire population of 195 was adopted for the study as a sample size. This is because the entire population was small and manageable, as such there no sampling technique adopted. The instruments for data collection consisted of two self-made Questionnaires titled: "Digital Writing Assistant Questionnaire (DWATQ) and Research Writing Effectiveness of Postgraduate Business Education Students in Rivers State Universities (RWEPBSQ)". The instruments adopted a 4-point Likert scale with response options of: Strongly Agree (SA-4points), Agree (A-3points), Disagree (D-2points), and Strongly Disagree (SD-1Point) respectively. The instrument was subjected to face and content validation by three experts, two from Business Education and one from Measurement and Evaluation. All from Faculty of Education, Rivers State University. The experts were supplied with statement of problem, objectives of the study, research questions, hypotheses and questionnaire items. Their observation comments and inputs were used to modify the final copies of the instrument before it was administered to the respondents. To establish reliability of the instrument, a pilot study was carried out. The questionnaire was distributed to 20 Postgraduate Business Education students in Nnamdi Azikiwe University, Awka in Anambra State, which is outside the area of the study. The instrument was administered once to the group. The data collected were analyzed using Cronbach Alpha Statistic Method to determine the internal consistency of the instrument. Therefore, since the reliability was done for each cluster of items in the instrument, reliability coefficient of 0.85 and 0.76, were obtained for the two instruments. Out of 195 copies of the instruments distributed, 176 copies were complete filled and retrieved on the spot from the respondents on each day of visit otherwise requested by respondents and used for data analysis of the study. The collected data was analyzed using Person Product Moment Correlation (PPMC) to answer research questions and test the null hypotheses formulated at 0.05 level of significance, while t-ratio transformation associated with the correlation coefficients for each research question was tested with the

corresponding hypothesis at 0.05 level. The decision rule for accepting or rejecting the hypotheses is given below:

i. 0.8 – 1.0 Very Strong Relationship
ii. 0.6 – 0.79 Strong Relationship
iii. 0.4 – 0.59 Moderate Relationship
iv. 0.2 – 0.39 Weak Relationship
v. 0.0 – 0.19 Very Weak or No Relationship

DATA PRESENTATION AND ANALYSIS

Research Question 1: *How does Grammerly relates with research writing effectiveness of postgraduate Business Education students in Rivers State Universities?*

Table 2: Calculated r of the Relationship that exists between Grammerly and research writing effectiveness of postgraduate Business Education students in Rivers State Universities (N= 176)

		Grammerly	Research writing effectiveness of postgraduate Business Education students
Grammerly	Pearson Correlation	1	.727**
	Sig. (2-tailed)		.001
	N	176	176
Research writing effectiveness of postgraduate Business Education students	Pearson Correlation	.727**	1
	Sig. (2-tailed)	.001	
	N	176	176

**. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS 21.0 Data Output, 2026

Table 2 presents the calculated coefficient (r) value based on responses among Business Education students, examining the relationship between grammerly and research writing effectiveness of postgraduate Business Education students. The table indicates a calculated r value of .727 which signifies a positive strong relationship that exist between grammerly relates with research writing effectiveness of postgraduate Business Education students in Rivers State Universoties.

Research Question 2 : *How does QuillBot relates with research writing effectiveness of postgraduate Business Education students in Rivers State Universities?*

Table 3: Calculated r of the Relationship that exists between QuillBot and research writing effectiveness of postgraduate Business Education students in Rivers State Universities (N= 176)

		QuillBot	Research writing effectiveness of postgraduate Business Education students
QuillBot	Pearson Correlation	1	.481**
	Sig. (2-tailed)		.001
	N	176	176
Research writing effectiveness of postgraduate Business Education students	Pearson Correlation	.481**	1
	Sig. (2-tailed)	.001	
	N	176	176

**. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS 21.0 Data Output, 2026

Table 3 presents the calculated coefficient (r) value based on responses among students of the Department of Business Education, examining the relationship between QuillBot and research writing effectiveness of postgraduate Business Education students. The table indicates a calculated r value of .481 which signifies that there is a positive and moderate relationship between QuillBot relates with research writing effectiveness of postgraduate Business Education students in Rivers State Universities.

Hypothesis 1

1. There is no significant relationship between Grammerly and research writing effectiveness of postgraduates Business Education students in Rivers State Universities.

Table 4: Calculated r of the Relationship that exists between Grammerly and research writing effectiveness of postgraduates Business Education students in Rivers State Universities (N= 176)

		Grammerly	Research writing effectiveness of postgraduate Business Education students
Grammerly	Pearson Correlation	1	.727**
	Sig. (2-tailed)		.001
	N	176	176
Research writing effectiveness of postgraduate Business Education students	Pearson Correlation	.727**	1
	Sig. (2-tailed)	.001	
	N	176	176

**. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS 21.0 Data Output, 2026

From the result in Table 4, it is shown that a positive, strong and significant relationship exists Grammerly and research writing effectiveness. The calculated coefficient (r) value .727 indicates a positive, strong and significant relationship, it is also significant at p-value of .001 <0.05. Therefore, based on empirical findings, the null hypothesis earlier stated (i.e. HO_1) is hereby rejected. Thus, there is a positive, strong and significant relationship between relationship between Grammerly and research writing effectiveness of postgraduates Business Education students in Rivers State Universities.

Hypothesis 2

There is no significant relationship between QuillBot and research writing effectiveness of postgraduates Business Education students in Rivers State Universities

Table 5: Calculated r of the Relationship that exists between QuillBot and research writing effectiveness of postgraduates Business Education students in Rivers State Universities (N= 176)

		QuillBot	Research writing effectiveness of postgraduate Business Education students
QuillBot	Pearson Correlation	1	.481**
	Sig. (2-tailed)		.001
	N	176	176
Research writing effectiveness of postgraduate Business Education students	Pearson Correlation	.481**	1
	Sig. (2-tailed)	.001	
	N	176	176

**. Correlation is significant at the 0.05 level (2-tailed).

Source: SPSS 21.0 Data Output, 2026

The results shown in Table 5 above, with the calculated coefficient (r) value of .481, means that there is positive, moderate and significant relationship between QuillBot and research writing effectiveness. The association is also significant at p-value = 0.001 < 0.05 significance level. This means that the previously stated null hypothesis (i.e. HO_2) is hereby rejected and this implies that there is a positive and significant relationship between QuillBot and research writing effectiveness of postgraduates Business Education students in Rivers State Universities.

DISCUSSION OF FINDINGS

The findings of research questions one and hypotheses one revealed that there is a significant relationship between Grammerly and research writing effectives of postgraduate business Education students in Rivers state Universities, but the relationship is a strong one. The result further showed that Grammerly significantly improve grammatical accuracy, clarity and mechanics. This finding is inline with Ghunfrion and Rosyida (2018), who reported that Grammerly reduce surface level error in students writing to about 45%. In the context of Rivers State Universities, Postgraduate Business education often struggle with academic tone and sentence structure. Grammerly real-time feedback acted as a "writing coach". Also, this finding corroborates with the findings of Barrot (2022), who posited that automated writing evaluation tools increases self-editing skills and writing confidence. However, this finding also supports the report of Koltoskia (2020), who submitted that over-reliance without meta cognitive engagement leads to passive acceptance of suggestions. Thus, while Grammarly enhance effectiveness, its impact on interpreting feedback. Confirming this, Godwin (2022) opined that tool efficiency is mediated by digital literacy. The submission of the researchers is that Grammarly increase clarity , accuracy an professionals in academic writing which leads to higher quality research papers and better feedback from supervisors.

The findings of research question two and hypotheses two showed that there is a significant relationship between QuillBot and research writing effectiveness of postgraduates Business Education students in Rivers State Universities. The moderate relationship recorded in this finding showed that QuillBot usage can improve paraphrasing, vocabulary variation and plagiarism avoidance. This finding corroborates Fitria (2021), who found that QuillBot helps postgraduate students to express complex ides without direct copying. For Business Education students who must synthesize theories from multiple sources, QuillBot served as a linguistic scaffold (Prentice & Kinden, 2018). Yet the finding also raises ethical concern as noted by Robinson and MC Carthy (2017), when they contained that AI paraphrasing can produce intelligence plagiarism. In this study students with prior instruction in academies integrity showed better outcomes.

CONCLUSION

Based on the findings of the study it was concluded that the combined use of the Digital Writing Assistant tools addresses the core dimensions of research writing such as language quality, originality, literature access, scholarly engagement, and referencing accuracy. Postgraduate Business Education students in Rivers State Universities who integrated Grammarly and QuillBot, into their research process showed statistically significant improvements in writing effectiveness. However, effectiveness is moderated by digital literacy, training and ethical usage

RECOMMENDATIONS

Based on the finding of the study, the following recommendations were made.

1. University management should organize hand-on workshop on Grammarly for editing and improving grammatical accuracy of student report writing.
2. Rivers State University/Management should provide institutional access by subscribing to QuillBot premium for all postgraduate students to bridge the digital divide.

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