Adoption Of Artificial Intelligence Tools and Students' Academic Performance in Federal Polytechnic Ilaro, Ogun State

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Abstract

The adoption of artificial intelligence (AI) tools in education is essential for developing evidence-based learning practices and optimizing the academic environment. This study examined the effect of AI tools on students' academic performance at Federal Polytechnic, Ilaro, Ogun State. A survey research design was employed, utilizing a structured questionnaire as the primary data collection instrument. The study targeted HND final-year students, with a total population of 2,639 as of December 2024. Using the Taro Yamane sample size formula, a sample of 347 respondents was selected. Regression and correlation statistical models were applied to analyze the relationship between AI tool usage and students' academic performance.The findings revealed no significant relationship between the use of AI tools and students' academic performance. Specifically, ChatGPT exhibited a weak negative correlation with academic performance; however, the result was not statistically significant. Likewise, Turnitin and Quillbot showed correlations close to zero, indicating no meaningful relationship with students' academic outcomes. The high p-values for all three AI tools 0.064 for ChatGPT, 0.979 for Turnitin, and 0.881 for Quillbot further confirmed that their impact on academic performance was not statistically significant at the institution.Therefore, it can be concluded that while AI tools such as ChatGPT, Turnitin, and Quillbot are widely utilized in academic settings, their direct influence on students' academic performance at Federal Polytechnic, Ilaro, remains minimal. Based on these findings, the study recommends that the institution's management educate students on the moderate and responsible use of AI tools for academic work. This approach will help foster critical thinking skills and prevent potential drawbacks associated with over-reliance on AI technologies in learning.

Keywords: *Artificial, Intelligence, Student, Academic and Performance,*

Introduction

In the 21st century, as the world accelerates at an unprecedented pace, the need for technological updates across various sectors has become essential. From the tech industry to the business world, and from healthcare to military organizations, each sector is undergoing significant transformation to remain competitive. Artificial Intelligence (AI) stands out as a transformative tool enabling rapid advancements and innovation (Mishra, 2017). We are approaching a future where intelligent machines and humans will collaborate to redefine productivity. As Mishra

(2017) metaphorically puts it, AI can be likened to a "Brahmastra" a powerful weapon in the Hindu scriptures.

AI has made profound impacts across multiple sectors, including businesses, security, navigation, and research, all of which have witnessed remarkable improvements (Bauer, 2017; Chatterjee, 2021). Non-profit sectors such as healthcare and education have also benefitted. Several studies have shown that AI has contributed to significant developments in health infrastructure (Jiang, 2017; Davenport & Kalakota, 2019) and educational systems (Subrahmanyam & Swathi, 2018; Chen, 2020). Aleven (2016), notes that AI is a multidisciplinary field encompassing computer science, statistics, linguistics, psychology, and decision science. Its central goal is to replicate or substitute human intelligence in performing specific tasks (Hwang, 2020; Luan, 2020; Luckin, 2016). Rich and Knight (2017), cited by Barr and Feigenbaum (2018), define AI as the study of how to make computers do things which, at the moment, people do better.

For the purpose of this study, AI is considered in its broadest sense any application of computer systems to simulate or replace human cognitive functions using machine-enabled analytical processes applied to large data sets. Technologies, according to Sari (2021), serve as facilitators that accelerate processes previously deemed laborious. As AI evolves, its capabilities are transforming how we solve complex problems and improve decision-making systems. However, as these tools shape automation and decision-making, issues of transparency, accountability, and bias mitigation gain prominence (Hwang, 2012). Ethical concerns such as algorithmic fairness, data privacy, and societal impacts must be carefully navigated to ensure AI systems align with societal norms and values (Alhashmi, 2019).

Despite its advantages, AI presents concerns, particularly in education. While it may enhance efficiency and reduce costs, fears about job displacement, as well as the need for up skilling, are rising. Striking a balance between innovation and the preservation of livelihoods is essential.
At Federal Polytechnic, Ilaro, the integration of AI tools in education is expanding, yet empirical research assessing its adoption and impact on students' academic performance remains limited. AI-driven tools like ChatGPT, QuillBot, and Turnitin show promise in improving learning outcomes. However, issues around user trust, data privacy, and ethics continue to challenge their adoption (Fitria, 2021; Dwivedi et al., 2023). Students and faculty express skepticism regarding

the fairness and accuracy of these tools, and opaque data practices raise security concerns. Moreover, excessive reliance on AI may undermine students' critical thinking and encourage surface learning rather than deep comprehension (Kasneci et al., 2023).

Ethical complications also emerge with the use of AI-based paraphrasing and plagiarism detection tools, as students may exploit them to bypass originality checks (Zhou et al., 2022). Inconsistent faculty usage, lack of institutional policies, and inadequate training further restrict AI integration (Alam, 2022). Additionally, poor internet infrastructure, limited digital literacy, and the cost of AI tool subscriptions disproportionately affect economically disadvantaged students (Mhlanga, 2023; Brown & Jones, 2021). The diminishing lecturer-student interaction due to AI reliance could also affect mentorship and the human element of learning (Aleven, 2016). Without institutional guidelines, these challenges could hinder the benefits of AI in academic environments. Therefore, this study seeks to examine the impact of AI tool adoption on student academic performance at Federal Polytechnic, Ilaro, aiming to provide insights for responsible and effective integration of AI in higher education.

Objective of the study

The prime objective of this study is to examine the effect of Artificial Intelligence (AI) tool adoption on student academic performance at Federal Polytechnic, Ilaro. The specific objectives are to:

1. Assess the effect of ChatGPT on students' academic performance at Federal Polytechnic, Ilaro.
2. Evaluate the impact of Turnitin on students' academic performance at Federal Polytechnic, Ilaro.
3. Investigate the effect of Quillbot on students' academic performance at Federal Polytechnic, Ilaro.

Literature Review

Artificial Intelligence

Artificial Intelligence (AI) is the process of modeling human thinking and designing a machine so that it can behave like humans or other terms called cognitive tasks, namely how machines can learn automatically from programmed data and information. Zhang,(2021). Artificial

intelligence or (AI) is a technology where machines can learn and understand logic like humans. This technology is said to be able to help simplify human life which is very complex (Fitria, 2021a). The role of Artificial Intelligence (AI) technology is increasingly evident in various sectors, including the education sector. The presence of AI technology has transformed the educational curriculum, especially in the fields of technology, science, mathematics, and engineering. But AI will also change the face of the world of education as a whole.

2.1.2 Dimension of Artificial Intelligence

2.1.2.1 Integration of ChatGPT, Turnitin, and QuillBot in Academic Settings

The application of Artificial Intelligence (AI) tools such as ChatGPT, Turnitin, and QuillBot is rapidly transforming scholarly practice on university campuses. The tools, though varying in function, all seek to improve the quality of writing, ensure originality, and aid learning. Their use also raises significant pedagogical and ethical issues.

ChatGPT, which is built by OpenAI, is a highly effective language model founded on the Generative Pre-trained Transformer (GPT) framework. It is made to comprehend and create human-like replies grounded on extensive datasets. ChatGPT can answer questions, create essays, summarize text, and even provide dialogue-based tutoring. While it has novel potential in content generation and personalized learning, it also has scholarly detriments such as the spread of misinformation, lack of source citation, outdated knowledge bases, and susceptibility to mathematical and logical fallacies (Liu, 2023; Mufdalifah, 2017). Furthermore, the potential use of ChatGPT by students to complete coursework raises concerns about academic integrity, plagiarism, and undermining critical thinking and underscores the need for robust institutional processes and clear ethical guidelines.

Turnitin, on the other hand, is a plagiarism detection program that is widely applied in ascertaining the originality of academic submissions. It compares students' work with a vast database of published scholarship and previously submitted papers. While Turnitin promotes academic integrity by detecting unoriginal work and encouraging citation (Howard, 2021), it is not without critique. It has been suggested by some scholars that it encourages a culture of suspicion between lecturers and students and develops what Brabazon (2005) refers to as a "panopticon of plagiarism." Excessive utilization of technology to police academic dishonesty is also criticized by Bruton and Childers (2016). As Cressida Magaro at the University of

Pittsburgh puts it, "Academic integrity is an issue of institutional culture, not of technology," and that tools like Turnitin should supplement, not replace, academic guidance and dialogue.

QuillBot offers an additional level of support with AI-powered paraphrasing, grammar correction, and summarization features to support academic writing. QuillBot is designed to expand clarity and fluency and aids students in rephrasing their writings without changing original meaning (Fitra, 2021). It allows one to make expression clear, improve sentence variation, and remove redundancy. Although it can boost writing efficiency and reduce revision time, QuillBot also poses danger if used for masking plagiarism or evading original thought.
Together, ChatGPT, Turnitin, and QuillBot represent a new wave of AI implementation in higher education each with enormous benefits and, inevitably, challenges. These applications require a balanced implementation approach by teachers and institutions in encouraging digital literacy, ethical use, and critical engagement to help ensure that technological support enhances, not diminishes, student learning outcomes.

Applications of Artificial Intelligence Tools in Educational Measurement and Assessment.

AI has been transforming education in recent years. This increasing significance of AI has garnered the interest of numerous scholars actively exploring diverse methods to incorporate various AI tools within the classroom environment (Halaweh, 2023; Mena-Guacas 2023; Papapicco, 2020). With the increasing availability of data and the growing sophistication of machine learning algorithms, AI has the potential to revolutionize the way we learn, teach, and assess student progress. Several benefits of using AI in education have been advanced. For example, Adiguzel (2023) presented some benefits of using Al for administrators, teachers and learners. AI has been found to play a crucial role in motivating students (Lin 2021; Xia, 2022), raising their engagement levels (Huang 2023and Nazari 2021), learning interest (Hou, 2022), learners' interaction (Karsenti, 2019), anxiety reduction (Hawes & Arya, 2023; Ren, 2020), prediction of students' future outcomes (Kumar, 2019; Luo 2022) and academic performance (Khan 2021).

Artificial Intelligence and student academic performance

Artificial intelligence (AI) integration in education has brought dramatic developments in the digital age, changing instructional strategies, curriculum design, and student involvement

(Hwang G, and others, 2002). Artificial intelligence (AI) is a technical development that has profoundly impacted this area. The quick advancement of AI-driven solutions creates several prospects for society and the educational field. Artificial intelligence can automate various time-consuming and repetitive jobs in the workplace, boosting efficiency and productivity. Individualized learning options in the classroom benefit students, and teachers can use cutting-edge teaching strategies. Education has always been known for being flexible and receptive to new technological developments. Before the advent of computers and other associated technologies, instructors and pupils reportedly delivered lessons and learned through the mechanical application of natural human effort (Chen & Lin, 2020). AI has become a potent instrument in this digital age that promises to improve education in various ways. According to Huang, (2021) artificial intelligence (AI) can revolutionize digital learning, enhance teaching techniques, and affect the direction of digital education. Several departments in educational institutions or the education sector have incorporated artificial intelligence. Motlagh,(2023) stated that artificial intelligence has had a significant impact on the learning process in many ways, including increased effectiveness and efficiency in school administration, global learning, individualized learning, innovative content, and motivational teaching. It is crucial to comprehend this relationship because it can help politicians and educational institutions realize the full potential of AI.

The relationship between artificial intelligence (AI) and academic performance can be multifaceted. AI can positively impact academic performance through personalized learning experiences, adaptive assessments, and intelligent tutoring systems tailored to individual students' needs. It can also assist educators in analyzing student data to identify areas for improvement and provide targeted interventions. However, concerns arise regarding AI's potential to widen educational inequalities, data privacy issues, and the need for ethical AI implementation in educational settings. Overall, the relationship between AI and academic performance depends on how effectively it is integrated into educational systems and its alignment with educational goals and values.

Theoretical Review

The study is underpinned by Computation learning Theory of Leslie Valiant (1984)

Computational Learning Theory (CoLT) is a subfield of Artificial Intelligence (AI) that focuses on the mathematical design and analysis of machine learning algorithms. It quantifies learning problems by applying theoretical computer science principles, helping to characterize the complexity of learning specific tasks. CoLT is closely related to Statistical Learning Theory

(SLT), which focuses on analyzing learning algorithms. While these two fields overlap, CoLT primarily deals with the theoretical aspects of learning tasks, whereas SLT concentrates on the mathematical principles behind learning algorithms. Despite its depth, machine learning practitioners do not necessarily need an in-depth understanding of CoLT to achieve effective results in applied AI tasks. This study examines the effect of AI tools such as ChatGPT, Turnitin, and Quillbot on students' academic performance. CoLT's focus on quantifying learning problems aligns with this research by providing a theoretical foundation for understanding how AI-driven learning tools influence students' cognitive processes. The study's findings that AI tools do not significantly impact academic performance can be further interpreted using CoLT principles, which highlight the complexity of learning processes and suggest that AI tools alone may not be sufficient for improving educational outcomes without structured human intervention and critical thinking skills.

Empirical Review

Smith and Jones (2020) conducted a study on the application of AI software, including Turnitin and ChatGPT, in American and United Kingdom universities. In their research, they employed the mixed-methods approach to collect data using 300 questionnaires from students in three universities. According to their research, Turnitin contributed significantly to plagiarism case checking, while ChatGPT was useful in improving the language skills of students and making them effective writers. This study targeted the dual impact of AI tools on academic honesty and writing skills. The researchers justified that AI tools improve academic honesty, enhance student writing, and enhance their academic performance. They recommended that more AI tools be incorporated in institutions' curricula and expose students to ethical exposure on utilizing AI to counteract its misuse.

Liu (2023) afterwards critiqued the moral undertones of using AI tools within learning, the main concerns of which include issues of accuracy, biases, as well as opening doors to unconscious plagiarism. The case study and literature review provided by Liu concerning renowned universities of the US and UK showed that while AI tools like ChatGPT help enhance cognitive learning, they also bring about issues in regard to moral usage of created material. The study discovered that academic institutions must develop clear guidelines for the use of AI tools responsibly to prevent academic dishonesty and bias.

In Kenya, Ochieng and Njoroge (2022) explored the impact of AI tools such as Turnitin and ChatGPT on Kenyan university students' performance. Their own quantitative study of 200 students in two Nairobi universities revealed that AI tools significantly enhanced students' understanding of course material and the quality of written work. However, the research also validated that the majority of the students had no idea of proper citation practices when using AI-generated content. The authors concluded that while AI software like Turnitin helped to prevent plagiarism, ChatGPT allowed students to articulate intricate concepts easily. The authors recommended that Kenyan universities provide training programs to teach students how to use AI tools effectively in their academic work.

Asare and Boateng,(2021) conducted a mixed-method study in Ghana to explore how Quillbot and Turnitin support the academic performance of students. Their study, which surveyed 150 students at public and private universities in Accra, proved that Quillbot significantly helped students paraphrase and enhance grammar, while Turnitin helped uphold academic integrity. The findings confirmed that AI software improved the quality of assignments, reduced plagiarism, and encouraged higher academic honesty. The writers recommended that Ghanaian universities integrate AI tools in their courses and educate on how to optimize their use.

Adegboyega and Akinmoladun, (2022) in Nigeria examined the impact of Turnitin and ChatGPT on academic performance among students. They applied a cross-sectional study with 250 participants drawn from three universities in Nigeria and utilized surveys and academic performance reports. The study determined that ChatGPT improved students' language proficiency and comprehension of course content, while Turnitin ensured academic integrity and reduced plagiarism. The authors concluded that the use of these AI tools improved the academic performance of students by enhancing both cognitive and behavioral outcomes. Based on these findings, the authors advised Nigerian universities to integrate AI tools into their learning systems and develop policies to stem their abuse.

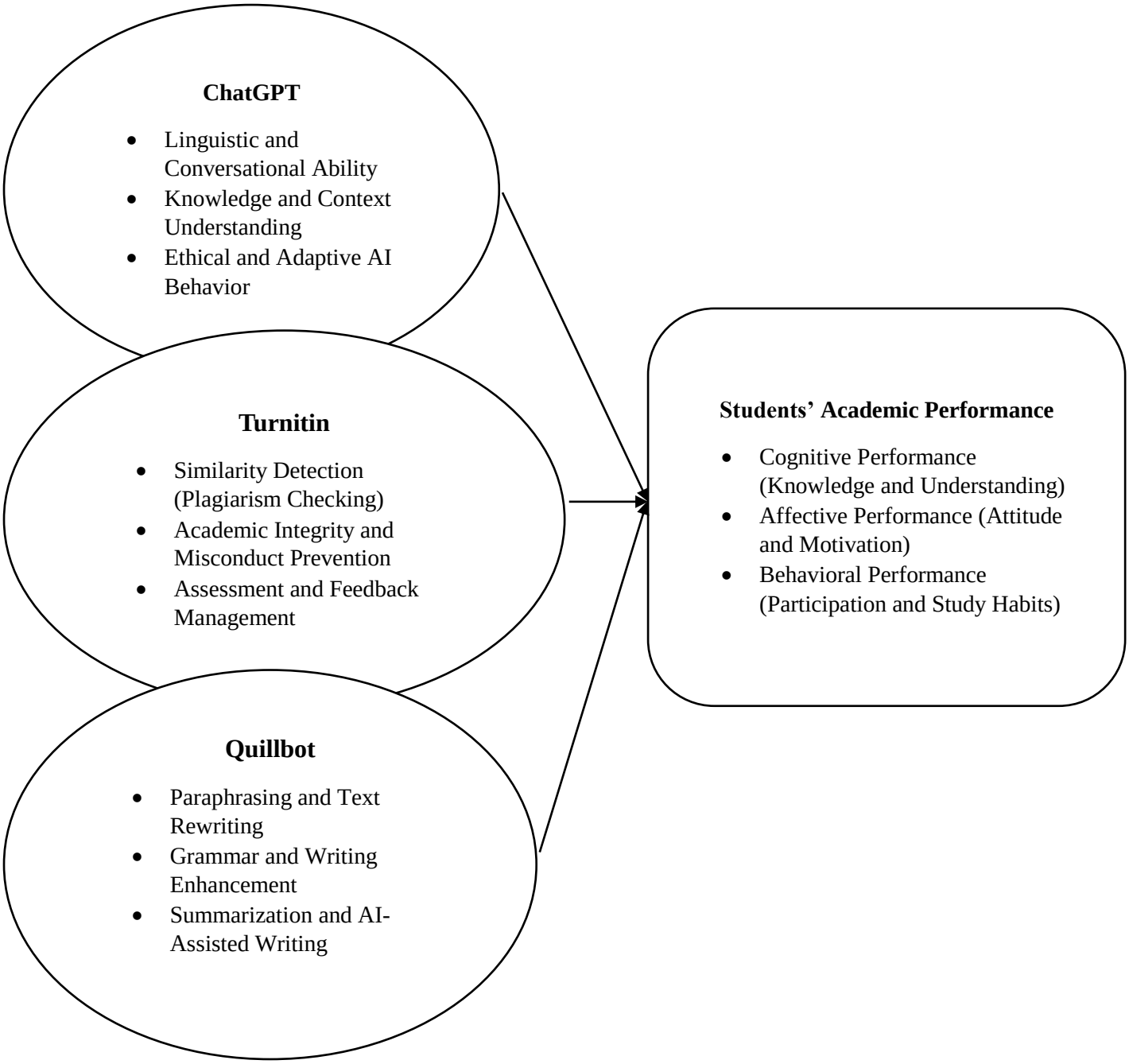
Adewale and Akinola (2023) also investigated the relationship between AI tools, specifically Quillbot, Turnitin, and ChatGPT, and the academic achievement of students at the University of Lagos and Obafemi Awolowo University. Using a descriptive survey approach, they surveyed 200 students and found a positive relationship between the use of AI tools and improved academic performance. Quillbot was particularly useful in enhancing writing efficiency, while

Turnitin assisted in better academic honesty. The authors found that AI tools played a crucial role in enhancing students' performance academically through enhanced quality of writing, academic integrity assistance, and interest in course material. They recommended that Nigerian institutions increasingly use AI tools and give training to make their ethical and effective application a reality.

Conceptual Framework

Independent Variable Dependent Variable

Dimensions of Artificial Intelligent Tools in Academics



Source: *Researchers Construct, 2025.*

The conceptual framework illustrates the relationship between AI tools and students' academic performance, with AI tools as the independent variable and academic performance as the dependent variable. It categorizes AI tools into three platforms: ChatGPT, which enhances linguistic ability, context understanding, and ethical AI behavior; Turnitin, which supports plagiarism detection, academic integrity, and feedback management; and Quillbot, which aids in paraphrasing, grammar enhancement, and summarization. These tools impact students' cognitive (knowledge and understanding), affective (attitude and motivation), and behavioral (participation and study habits) performance. The framework suggests that AI tools contribute to improved learning outcomes by offering instant explanations, promoting academic integrity, and refining writing skills, ultimately shaping students' academic success.

Methodology

The study employed a survey research design using a structured questionnaire. The population consisted of all Higher National Diploma (HND) II students at the Federal Polytechnic, Ilaro, during the 2023/2024 academic session a total of 2,639 students across all faculties, as reported by the Admissions Unit of the Registry Department (2024). Final-year students were selected based on their extensive assignment workloads and advanced research demands, which make them more likely to utilize AI-based tools. A sample size of 348 respondents was determined using Taro Yamane’s formula. Data were collected primarily through the structured questionnaire, which was designed to elicit information relevant to the study’s objectives. The collected data were analyzed using regression and correlation techniques to determine the significance of the relationships under investigation.

Data Analysis

Table 4.1: Correlations

		ChatGPT	Turnitin	Quilbot	Students' AcademicPerformance
ChatGPT	Pearson Correlation	1	.322**	.322**	-.101
	Sig. (2-tailed)		.000	.000	.064
	N	336	336	336	336
Turnitin	Pearson Correlation	.322**	1	.412**	.001
	Sig. (2-tailed)	.000		.000	.979
	N	336	336	336	336
Quilbot	Pearson Correlation	.322**	.412**	1	.008
	Sig. (2-tailed)	.000	.000		.881
	N	336	336	336	336
Students' AcademicPerformance	Pearson Correlation	-.101	.001	.008	1
	Sig. (2-tailed)	.064	.979	.881	
	N	336	336	336	336

**. Correlation is significant at the 0.01 level (2-tailed).

The correlation table above indicates that there is a weak negative relationship between ChatGPT and students' academic performance, with a correlation value of -0.101. This suggests that students who use ChatGPT may experience slightly lower academic performance. However, the significance level (Sig. = 0.064) is above the 0.05 threshold, indicating that the relationship between ChatGPT and students' academic performance is not statistically significant at Federal Polytechnic, Ilaro, Ogun State.

Similarly, the correlation values for Turnitin (0.001) and Quillbot (0.008) are both very close to zero, signifying no meaningful relationship between the use of these AI tools and students' academic performance. The high p-values (0.979 for Turnitin and 0.881 for Quillbot) further suggest that these results are not statistically significant. These findings confirm that the use of Turnitin and Quillbot does not have a direct impact on students' academic performance.

In conclusion, the lack of significant correlations between these AI tools (ChatGPT, Turnitin, and Quillbot) and students' academic performance suggests that their use does not significantly predict academic success at Federal Polytechnic, Ilaro, Ogun State.

ANOVA[a]

Table 4.2

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.149	3	.050	1.411	.239[b]
	Residual	11.703	332	.035		
	Total	11.852	335			

a. Dependent Variable: Students' AcademicPerformance

b. Predictors: (Constant), Quilbot, ChatGPT, Turnitin

The ANOVA table above indicates that Quilbot, ChatGPT, and Turnitinhas a significant value of 0.239, which is greater than the conventional threshold of 0.05. This implies that Quilbot, ChatGPT, andTurnitin is statistically insignificant with students' academic performance. According to this result,AI tools adopted for this study are not good predictors of students' academic performance. Hence, Artificial Intelligence has no significant effect on students' academic performance in Federal Polytechnic, Ilaro, Ogun state.

Table 4.3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	3.798	.124		30.561	.000
	ChatGPT	-.059	.029	-.121	-2.052	.041
	Turnitin	.013	.031	.025	.413	.680
	Quilbot	.019	.033	.037	.599	.550

a. Dependent Variable: Students' AcademicPerformance

4.2 Test of Hypotheses

Decision Rule: if p-value is greater than 0.05, accept the null (H_0) and reject the alternative (H_1). However, if p-value is lesser than 0.05, reject the null (H_0) and accept the alternative (H_1).

Hypothesis One

H_0: ChatGpthas no significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

H_1: ChatGpthas significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

The above table indicates that ChatGpt has a significant value of 0.041, which is less than the conventional threshold of 0.05. This suggests that ChatGptis statistically significant with students' academic performance. According to this result, alternate hypothesis is accepted. Hence, we concludeChatGpthas significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

Hypothesis Two

H_0: turnitinhas no significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

H_1: turnitinhas significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

The coefficient table further shows that turnitinhas a significant value of 0.680 which is greater than 0.05 level of significance. This inferred that turnitinis statistically insignificant with students' academic performance. Therefore, null hypothesis is accepted. Thus, we conclude that turnitin has no significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

Hypothesis Three

H_0: quillbothas no significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

H_1: quillbothas significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun state.

The coefficient table revealed that quillbothas a significant value of 0.550, which is greater than the conventional threshold of 0.05. This suggests that quillbot is statistically insignificant with students' academic performance. According to this result, null hypothesis is accepted. Therefore, we conclude quillbothas no significant effect on students' academic performance in Federal polytechnic Ilaro, Ogun State.

Discussion of Findings

The first hypothesis of this study provides evidence that ChatGPT has a weak but negative effect on students' academic performance at Federal Polytechnic, Ilaro, Ogun State. This implies that while ChatGPT helps students understand complex concepts better and improves their ability to generate ideas for assignments, its ease of use may contribute to over-reliance, potentially hindering critical thinking skills. As a result, although students find ChatGPT beneficial for learning, excessive dependence on it may negatively impact their academic performance.Based on the regression analysis, the simple regression equation is formulated as:**Y = 3.798+ (-0.059) X.**

The linear regression equation indicates that the intercept term (β_0) is estimated to be 3.798, meaning that if ChatGPT usage is zero, students' academic performance is expected to have a value of 3.798. The coefficient value for ChatGPT (X) is -0.059, suggesting that a one-unit increase in ChatGPT usage leads to a 5.9% decrease in students' academic performance (Y).

Furthermore, the study revealed that Turnitin has no significant effect on students' academic performance at Federal Polytechnic, Ilaro. This finding suggests that many students do not actively use Turnitin to improve the originality of their assignments or enhance their writing skills. Additionally, there appears to be a lack of awareness regarding proper citation practices, resulting in students failing to detect and address plagiarism in their work.Based on the regression analysis in Table 4.1.27, the simple regression equation is formulated as:

Y = 3.798 +0.013X.

The equation suggests that the intercept term (β_0) is 3.798, meaning that if Turnitin usage is zero, students' academic performance is expected to have a value of 3.798. The coefficient value for Turnitin (X) is 0.013, indicating that a one-unit increase in Turnitin usage results in a slight 1.3% increase in students' academic performance (Y).Lastly, the findings of the study show that Quillbot also has no significant effect on students' academic performance at Federal Polytechnic, Ilaro. This suggests that students are not effectively using Quillbot for paraphrasing, which impacts the clarity and coherence of their writing. Additionally, students are not exploring Quillbot's full potential to enhance their ability to rewrite sentences while maintaining their original meaning.Based on the regression analysis, the simple regression equation is formulated as:**Y = 3.798 + 0.019X.**

The equation shows that the intercept term (β_0) is estimated to be 3.798, meaning that if Quillbot usage is zero, students' academic performance is expected to have a value of 3.798. The coefficient value for Quillbot (X) is 0.019, suggesting that a one-unit increase in Quillbot usage leads to a 1.9% increase in students' academic performance (Y).Overall, the findings indicate that while AI tools like ChatGPT, Turnitin, and Quillbot are widely accessible, their impact on students' academic performance is limited. Proper training and structured implementation of these tools in academic settings may be necessary to maximize their effectiveness in enhancing student learning outcomes.

Conclusion

This study aimed to examine the impact of Artificial Intelligence (AI) tools ChatGPT, Turnitin, and Quillbot on students' academic performance at Federal Polytechnic, Ilaro, Ogun State. The findings revealed that there is no significant relationship between the use of these AI tools and students' academic performance. Specifically, ChatGPT exhibited a weak negative correlation with academic performance, but the result was not statistically significant. Similarly, Turnitin and Quillbot showed correlations that were close to zero, further indicating no meaningful relationship with students' academic performance. The high p-values for all three AI tools (0.064 for ChatGPT, 0.979 for Turnitin, and 0.881 for Quillbot) confirm that these tools do not have a statistically significant effect on students' academic outcomes at the institution.

Therefore, it can be concluded that while AI tools like ChatGPT, Turnitin, and Quillbot are widely used in educational settings, their direct influence on students' academic performance at Federal Polytechnic, Ilaro, Ogun State, is limited. This suggests that other factors, such as teaching methods, student motivation, and study habits, may play a more substantial role in shaping academic success.

Recommendations

The management of Federal Polytechnic Ilaro should educate students on the moderate and responsible use of ChatGPT for assignments and other academic activities. Such education would help instill critical thinking skills and reduce the risk of over-reliance on the tool.

Training should emphasize the importance of academic integrity, ensuring that students use ChatGPT to complement their learning without breaching ethical standards.

Furthermore, Turnitin should be integrated into the curriculum across all departments. This can be achieved by making its use mandatory for major assignments and research projects. Incorporating Turnitin will reinforce the value of academic honesty, promote proper citation practices, and enhance the quality of student writing by identifying and preventing plagiarism.
The institution's management should also implement training programs to educate both students and faculty members on the effective use of QuillBot. These sessions should focus on improving writing skills, enhancing paraphrasing abilities, and understanding how to avoid plagiarism. Practical, hands-on workshops will be especially useful in helping users grasp the strengths and limitations of the tool, ensuring it is used appropriately in academic work.

Lastly, to support the ethical and effective use of AI tools such as ChatGPT, the institution should introduce a curriculum component on AI literacy. This course or module would help students understand the capabilities and limitations of AI technologies, preparing them to apply these tools responsibly. By gaining a balanced understanding of AI's benefits and challenges, students can enhance their academic performance while upholding academic standards.

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