



INFLUENCE OF TEACHERS' ETHICAL COMPETENCE IN INTEGRATION OF ARTIFICIAL INTELLIGENCE ON STUDENTS' ACADEMIC PERFORMANCE IN PUBLIC SENIOR SECONDARY SCHOOLS IN RIVERS STATE



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Abstract

The study investigated influence of teachers' ethical competence in integration of artificial intelligence on students' academic performance in public senior secondary schools in Rivers State. Two research objectives, two research questions and two hypotheses guided the study. The study adopted a descriptive survey design with a population of 27,082 teachers and students comprising 25,077 students and 2,005 teachers in the 35 public senior secondary schools in Port Harcourt and Obio/Akpor Local Government Areas of Rivers State. The sample size of the study was 727 respondents comprising 394 students and 333 teachers. The sample size was determined using Taro Yamene's formula. The stratified random sampling technique was adopted in selecting the sample size. The instrument for the study was a self-designed questionnaire titled; "Influence of Teachers' Ethical Competence in Integration of Artificial Intelligence (AI) on Students' Academic Performance in Public Senior Secondary Schools Questionnaire". The instrument was validated by experts in educational research. The reliability of the instrument gave a Cronbach Alpha index of 0.81 which was considered reliable. Mean and standard deviation were used to answer the research questions while z-test statistics was used to test the formulated null hypotheses at 0.05 level of significance. The findings of the study revealed that, teachers' competence in data privacy and confidentiality and teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The study recommended among others that, the Ministry of Education in Rivers State should develop and implement continuous professional development programs focused on ethical AI integration for teachers.

Keywords: Artificial Intelligence (AI), Academic Performance. Public Senior Secondary Schools, Rivers State, Teachers' Ethical Competence.

Introduction

The integration of Artificial Intelligence (AI) into the education sector has emerged as a revolutionary step toward enhancing learning outcomes and educational management. In Nigeria, particularly in public senior secondary schools in Rivers State, the adoption of AI tools such as intelligent tutoring systems, predictive analytics, automated grading, and virtual teaching assistants is gaining momentum. These technologies, when appropriately implemented, have the potential to individualize learning, support students at risk, and improve overall academic performance (Oke & Abayomi, 2023). However, the successful application of these tools is not solely dependent on

technological infrastructure but also on the ethical competence of the teachers responsible for their implementation. Teachers, as mediators between technology and learners, must exhibit high levels of ethical responsibility to ensure that AI use is fair, unbiased, and aligned with educational goals.

Teachers' ethical competence encompasses their ability to make principled decisions, maintain fairness, safeguard students' data privacy, and promote inclusiveness in the use of AI systems. Ethical issues such as algorithmic bias, unequal access, and potential misuse of student data can arise in the absence of ethical awareness among teachers (Nwokike & Okonkwo, 2024). Educators need to understand not only how to operate AI tools but also how to employ them responsibly to prevent digital marginalization and discrimination. Teachers who exhibit ethical sensitivity are more likely to ensure that AI applications enhance learning equity and contribute positively to students' academic development. Therefore, the moral compass of teachers remains a critical factor in the ethical use of AI for educational purposes. The indicators of teachers' ethical competence in integration of Artificial intelligence that influence students' academic performance in public senior secondary schools include: Teachers' competence in data privacy and confidentiality and Teachers' equity and inclusion in AI Application.

Teachers' competence in data privacy and confidentiality is fundamental to the ethical integration of Artificial Intelligence (AI) in public secondary schools, as it directly affects the trust students place in educational systems and consequently their academic performance. When teachers understand and implement proper data governance principles, such as informed consent, data minimization, and secure data handling, they create a safe learning environment where students are more likely to engage and perform academically (Adeleke & Musa, 2023). With AI systems increasingly relying on student data to deliver personalized instruction, any breach in privacy could lead to misuse or unauthorized access to sensitive academic or personal information. This erodes student confidence, hinders participation, and in some cases, discourages learners from using AI-powered platforms altogether. Competent teachers who model and enforce data confidentiality contribute to building a digital culture of accountability and trust, fostering improved student engagement and academic outcomes (Okafor & Eze, 2022).

Moreover, a teacher's understanding of confidentiality in AI use influences their ability to protect students from the unintended consequences of algorithmic profiling, surveillance, or discriminatory data use. Educators with strong data ethics knowledge are better positioned to choose AI tools that comply with legal and ethical standards such as the Nigeria Data Protection Regulation (NDPR), ensuring fairness in grading, performance analytics, and learning recommendations (Aliyu & Gambo, 2023). Students who learn within such protected environments feel secure, respected, and are more likely to maximize the benefits of AI-enhanced learning—leading to improved concentration, creativity, and achievement (Yusuf, Onuoha, & Bello, 2024). Conversely, in environments where teachers lack competence in handling data privacy, students may experience anxiety, loss of autonomy, and resistance to technology-enhanced learning, ultimately affecting their academic progress. Therefore, enhancing teachers' capacity in this area is not only a legal imperative but a pedagogical necessity for academic success in AI-integrated classrooms.

Equity and inclusion are fundamental ethical principles in education that must be upheld in the application of Artificial Intelligence (AI) to ensure that all students benefit equally from digital innovations. Teachers play a pivotal role in translating these values into practice by ensuring that AI tools are used in ways that are fair, unbiased, and accessible to every learner, regardless of their background, gender, socioeconomic status, or learning abilities. When educators are intentional about inclusive AI integration, they help mitigate disparities that often arise from unequal access to technology and digital content (Ibrahim & Njoku, 2023). For instance, AI-driven personalized learning platforms can easily marginalize students with special needs if teachers fail to ensure that these tools are accessible and adaptable. Competent teachers who promote equity in AI usage create learning environments where students feel valued and are provided with equal opportunities to excel academically, which directly enhances performance outcomes (Ezeanya & Balogun, 2024).

Moreover, inclusive AI integration by ethically competent teachers fosters a sense of belonging and fairness among learners, which is crucial for academic motivation and achievement. When students

perceive that classroom technologies are used equitably for example, when AI-powered assessments are tailored to accommodate diverse learning needs—they are more likely to engage deeply with the learning process (Lawal & Dogo, 2023). Teachers who advocate for inclusivity in AI implementation also help identify and eliminate algorithmic biases that could disadvantage marginalized students. Such proactive efforts not only promote academic fairness but also improve classroom harmony and student-teacher relationships, ultimately contributing to better learning outcomes (Nwachukwu & Tella, 2024). Therefore, fostering equity and inclusion through AI in public secondary schools requires that teachers be both technically proficient and ethically committed to upholding the rights and dignity of all learners.

Students' academic performance in public secondary schools within Port Harcourt Metropolis, Rivers State, reflects a complex interplay of socioeconomic, instructional, infrastructural, and policy-related factors. As the urban hub of the state, Port Harcourt hosts a diverse population of learners from varying backgrounds, which contributes to differences in learning outcomes across schools. Academic performance is often measured through standardized test results, classroom assessments, and terminal examinations. However, performance disparities exist between schools due to challenges such as overcrowded classrooms, insufficient instructional materials, irregular teacher attendance, and inadequate funding (Ibimina & Wokocha, 2023). Studies have also shown that factors like parental involvement, availability of ICT facilities, and teacher effectiveness greatly influence students' academic success in this urban area (Tamunotonye & Okorie, 2024). In recent years, public education stakeholders in the metropolis have raised concerns about declining performance in core subjects like Mathematics and English, prompting calls for educational reforms and targeted interventions.

In addition, student academic performance in Port Harcourt public schools is shaped by policy implementation at the local and state levels. The introduction of free education and compulsory basic education programs has increased school enrollment, yet the learning environment has not been adequately expanded to meet growing demand (Boma & Adekola, 2023). Furthermore, while technological integration such as digital literacy initiatives and computer-based testing is being introduced in some schools, access remains unequal, leading to inconsistent performance across the metropolis. Environmental factors, including insecurity, cult-related violence, and poor schoolcommunity relations, also negatively affect students' concentration and attendance, which subsequently impacts academic achievement (Kio & Amadi, 2023). Despite these challenges, schools that maintain stable leadership, engage in regular teacher training, and foster inclusive and motivating learning environments tend to record better academic outcomes. Thus, improving students' academic performance in Port Harcourt requires a multidimensional approach involving infrastructural development, stakeholder collaboration, and pedagogical innovation.

In the Nigerian context, particularly within Rivers State, public secondary schools face numerous challenges such as inadequate training for teachers on AI tools, lack of clear ethical guidelines, and insufficient regulatory frameworks. These issues limit the effective integration of AI in classrooms, thereby reducing the potential impact on student performance (Chukwu & Benson, 2023). Studies have shown that while teachers may be willing to embrace AI, ethical lapses and lack of accountability in AI application can lead to adverse outcomes, including over-reliance on automation, reduced human interaction, and unfair assessment practices (Emeka & Ibrahim, 2023). Consequently, it becomes necessary to evaluate the influence of teachers' ethical competence as a strategic determinant in the adoption and effectiveness of AI tools.

Globally, there is increasing emphasis on the need for AI literacy and ethical training for teachers. UNESCO (2023) recommends that educators be equipped not only with technical skills but also with ethical frameworks to navigate the evolving digital learning environment. Similarly, researchers advocate for the incorporation of ethical AI education into teacher training curricula to enable educators to identify potential risks and act in the best interest of students (Fagbamigbe, 2023). In Rivers State, where disparities in access to digital tools still exist, ethical competence among teachers is crucial for ensuring that AI integration promotes inclusivity and bridges rather than widens educational gaps. Ethical competence can thus serve as both a preventive and enabling tool for maximizing the benefits of AI in education.

Given the emerging relevance of AI in education and the pressing need for ethical use, this study investigates the influence of teachers' ethical competence on the integration of AI and its subsequent impact on students' academic performance in public senior secondary schools in Rivers State. The findings will be useful for policy formulation, teacher professional development, and institutional planning, as they will offer insights into how ethical competence among educators can enhance or hinder technological advancement in the classroom. Ultimately, the study aims to contribute to the discourse on sustainable and equitable AI integration in Nigerian education.

Statement of the Problem

In recent years, the integration of Artificial Intelligence (AI) in education has gained significant momentum globally and within Nigeria's public education system. AI technologies such as intelligent tutoring systems, automated grading, and predictive analytics have the potential to enhance students' learning experiences and improve academic performance. In Rivers State, efforts are being made to implement such innovations in public senior secondary schools; however, these efforts often overlook a critical component, teachers' ethical competence in the use of AI tools. Ethical competence involves teachers' ability to make responsible, fair, and student-centered decisions regarding AI use, including issues related to data privacy, bias mitigation, transparency, and equitable access (Ibrahim & Njoku, 2023). When ethical considerations are ignored in AI integration, students' risk being subjected to unfair treatment, data breaches, and exclusion, all of which may negatively influence their academic achievement.

Despite the recognized importance of ethics in educational technology, evidence suggests that many teachers in public senior secondary schools in Rivers State have limited awareness or training in ethical frameworks guiding AI use (Lawal & Dogo, 2023). As AI tools rely heavily on student data to personalize learning, a lack of ethical competence on the part of teachers may lead to misuse of information, perpetuation of algorithmic bias, and marginalization of vulnerable student groups (Ezeanya & Balogun, 2024). Moreover, when teachers do not actively promote inclusion and fairness in AI-assisted learning environments, it undermines students' trust, participation, and ultimately, academic performance. These ethical gaps are particularly concerning given the growing dependence on AI to support decision-making in curriculum delivery, assessment, and student monitoring. Therefore, without ethically grounded teachers, the transformative potential of AI in enhancing students' academic outcomes may remain unfulfilled or misapplied.

There is currently a dearth of empirical studies in Rivers State that specifically investigate the influence of teachers' ethical competence in AI integration on students' academic performance. Most existing research focuses broadly on digital literacy or infrastructural readiness, without delving into how ethical teacher behaviors shape students' engagement with AI tools and affect learning outcomes (Nwachukwu & Tella, 2024). This gap presents a serious limitation to policy formulation, teacher training, and educational planning aimed at leveraging AI responsibly in schools. Understanding the extent to which teachers' ethical competence influences academic achievement through AI applications is therefore essential to designing interventions that ensure technology supports rather than hinders student success. It is within this context that the researcher carried out the study to find out; What is are the teachers' ethical competence in integration of artificial intelligence that influence students' academic performance in public senior secondary schools in Rivers State? And to proffer solutions to the stated problems.

Purpose of the Study

The purpose of this study was to examine, influence of teachers' ethical competence in integration of artificial intelligence on students' academic performance in public senior secondary schools in Rivers State. Specifically, the objectives of the study are to:

1. determine the extent to which teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.

2. find out the extent to which teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.

Research Questions

The following research questions guided the study:

1. To what extent does teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State?
2. To what extent does teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State?

Hypotheses

The following null hypotheses were used for the study and tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of teachers and students on the extent to which teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.
2. There is no significant difference in the mean ratings of teachers and students on the extent to which teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.

Methodology

The study adopted a descriptive survey design with a population of 27,082 teachers and students comprising 25,077 students and 2,005 teachers in the 35 public senior secondary schools in Port Harcourt and Obio/Akpor Local Government Areas of Rivers State. The sample size of the study was 727 respondents comprising 394 students and 333 teachers. The sample size was determined using Taro Yamene's formula. The stratified random sampling was adopted in selecting the sample size. The instrument for the study was a self-designed questionnaire titled; "Influence of Teachers' Ethical Competence in Integration of Artificial Intelligence on Students' Academic Performance in Public Senior Secondary Schools Questionnaire (ITECIAISAPPSSSQ)' Responses to the questionnaire items were structured on a four- point summated rating scale of: Very High Extent (VHE) – 4points, High Extent (HE) – 3points, Low Extent (LE) – 2points and Very Low Extent (VLE). The instrument was validated by experts in educational research. The reliability of the instrument gave a Cronbach Alpha total index of 0.81 which was considered reliable. Mean and standard deviation were used to answer the research questions while z-test statistics was used to test the formulated null hypotheses at 0.05 level of significance. The null hypothesis was rejected and the alternate hypotheses accepted when the computed value was greater than the critical value at the significance level of 0.05. On the contrary, the null hypothesis was also accepted and the alternate hypotheses rejected when the computed value is less than the critical table value.

Result Presentation

Research Question 1: To what extent does teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State?

Table 1: Mean Ratings of Respondents on the Extent Teachers' Competence in Data Privacy and Confidentiality in AI Application Influence Students' Academic Performance in Public Secondary Schools in Port Harcourt Rivers State



S/N	Items	Teachers N= 333		Students N= 394		Average mean	Std	RMK
		$\bar{X}_1$	Std1	$\bar{X}_2$	Std2			
1.	Competent teachers ensure that students' personal and academic data are securely managed, which helps build trust and encourages students to engage more openly with AI-powered learning platforms.	3.80	0.87	3.78	0.86	3.79	0.87	HE
2.	When teachers understand and uphold data confidentiality protocols, they reduce the risk of unauthorized access or identity theft, creating a safer digital environment that supports uninterrupted learning.	4.25	1.18	4.31	1.11	4.28	1.15	VHE
3.	Students are more likely to participate and perform well when they know their data is being handled responsibly by teachers who prioritize privacy in AI applications.	3.67	1.63	3.75	1.48	3.71	1.55	HE
4.	Teachers competent in data ethics avoid misinterpreting or misusing AI-generated analytics, ensuring that academic interventions are fair and targeted without stigmatizing underperforming students.	3.69	0.91	3.73	0.90	3.71	0.91	HE
5.	Teachers competent in data ethics avoid misinterpreting or misusing AI-generated analytics, ensuring that academic interventions are fair and targeted without stigmatizing underperforming students.	3.72	0.82	3.76	0.80	3.75	0.81	HE
Aggregate Mean/SD for Teachers and Students		3.83	1.08	3.87	1.03	3.85	1.06	VHE

Source: Field Survey, 2025.

Table 1 in response to research question 1 which states, to what extent does teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State had the following opinion scores for both

teachers and students. Mean scores of the teachers to questionnaire items 1, 2, 3, 4 and 5 were 3.80, 4.25, 3.67, 3.69 and 3.72 with standard deviations of 0.87, 1.18, 1.63, 0.91 and 0.85 while the mean scores of the students were 3.78, 4.31, 3.75, 3.73 and 3.79 with standard deviation of 0.86, 1.11, 1.48, 0.90 and 0.80. Furthermore, the mean set representing the average mean scores for both teachers and students were 3.79, 4.28, 3.71, 3.71 and 3.75; with standard deviation of 0.87, 1.15, 1.55, 0.91 and 0.81 respectively. The readings which were higher than the criterion mean of 3.00 indicated that teachers' competence in data privacy and confidentiality in

AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State to a high extent.

Research Question 2: To what extent does teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State?

Table 2: Mean Ratings of Respondents on the Extent Teachers' Equity and Inclusion in AI Application Influence Students' Academic Performance in Public Secondary Schools in Port Harcourt Metropolis, Rivers State

S/N	Items	Teachers N= 333		Students N= 394		Average mean	Std	RMK
		$\bar{X}_1$	Std1	$\bar{X}_2$	Std2			
6.	Teachers who promote equity in AI applications ensure that all students, regardless of their socioeconomic background, have access to the same learning opportunities and resources.	3.70	0.88	3.75	0.84	3.73	0.86	HE
7.	Teachers who integrate AI tools with a focus on inclusion can customize learning experiences to meet the diverse needs of students leading to improved academic outcomes for students with varied abilities.	4.35	1.16	4.41	1.11	4.38	1.14	VHE
8.	When AI tools are used inclusively, students from diverse backgrounds feel represented and valued, which boosts their motivation and engagement in learning, ultimately enhancing their academic performance.	3.68	1.61	3.74	1.48	3.71	1.54	HE
9.	Teachers who emphasize equity in AI applications ensure that all students are assessed fairly, without bias.	3.57	0.93	3.63	0.90	3.60	0.92	HE



10.	Teachers who use AI in an equitable manner are able to offer differentiated instruction tailored to students' individual learning paces and styles	3.72	0.85	3.77	0.82	3.75		HE
							0.83	
	Aggregate Mean/SD for Teachers and students	3.80	1.17	3.86	1.03	4.56	1.06	VHE

Source: Field Survey, 2025.

Table 2 in response to research question 2 which states, to what extent does teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State had the following opinion scores for both teachers and students. Mean scores of the teachers to questionnaire items 6, 7, 8, 9 and 10 were 3.70, 4.35, 3.68, 3.57 and 3.72 with standard deviations of 0.88, 1.16, 1.61, 0.93 and 0.85 while the mean scores of the students were 3.75, 4.41, 3.74, 3.63 and 3.77 with standard deviation of 0.84, 1.11, 1.48, 0.90 and 0.82. Furthermore, the mean set representing the average mean scores for both teachers and students were 3.73, 4.38, 3.71, 3.60 and 3.75; with standard deviation of 0.86, 1.14, 1.54, 0.92 and 0.83 respectively. The readings which were higher than the criterion mean of 3.00 indicated that teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State to a high extent. **Hypotheses Testing**

1. There is no significant difference in the mean ratings of teachers and students on the extent to which teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.

Table 3: Z-test Analysis on the Extent Teachers' Competence in Data Privacy and Confidentiality in AI Application Influence Students' Academic Performance in Public Secondary Schools in Port Harcourt Metropolis, Rivers State.

Respondents	N	$\bar{x}$	Std	DF	z-cal	z-crit	LS	Decision
Teachers	333	3.83	1.08	725	0.63	± 1.96	0.05	Accepted
Students	394	3.87	1.03					

Source: Field Survey, 2025

Table 3 above shows Z-test Analysis on the extent teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The result on the table showed that there is no significant difference between the mean opinion scores of both teachers and students on the extent teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The result on the table further showed a z-calculated value of 0.63 which was less than the z-critical value of ± 1.96 at 0.05 level of significance and with a degree of freedom of 725, since the z-calculated (0.63) was less than the z-tabulated (± 1.96), the null hypothesis was accepted which states that there is no significant difference between the mean opinion scores of teachers and students on the extent teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.

2. There is no significant difference in the mean ratings of teachers and students on the extent to which teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State.

Table 4: Z-test Analysis on the Extent Teachers' Equity and Inclusion in AI Application Influence Students' Academic Performance in Public Secondary Schools in Port Harcourt Metropolis, Rivers State.

Respondents	N	$\bar{x}$	Std	DF	z-cal	z-crit	LS	Decision
Teachers	333	3.80	1.17	725	0.58	± 1.96	0.05	Accepted
Students	394	3.86	1.03					

Source: Field Survey, 2025

Table 5 above shows Z-test Analysis on the extent teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The result on the table showed that there is no significant difference between the mean opinion scores of teachers and students on the extent teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The result on the table further showed a z-calculated value of 0.58 which was less than the z-critical value of ± 1.96 at 0.05 level of significance and with a degree of freedom of 725, since the z-calculated (0.58) was less than the z-tabulated (± 1.96), the null hypothesis was accepted which states that there is no significant difference between the mean opinion scores of teachers and students on the extent Descriptive learning analytics influence students' retention in open and distance learning programmes in Public Universities in Rivers State.

Discussion of Findings

The findings of the study are discussed as follows:

Table 1 above shows Z-test Analysis on the extent teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The result on the table 3 further showed a zcalculated value of 0.63 which was less than the z-critical value of ± 1.96 at 0.05 level of significance and with a degree of freedom of 725, since the z-calculated (0.63) was less than the z-tabulated (± 1.96), the null hypothesis was accepted which states that there is no significant difference between the mean opinion scores of teachers and students on the extent teachers' competence in data privacy and confidentiality in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. This result was in line with that of Adeleke and Musa (2023) who opined that, when teachers understand and implement proper data governance principles, such as informed consent, data minimization, and secure data handling, they create a safe learning environment where students are more likely to engage and perform academically. Also, Competent teachers who model and enforce data confidentiality contribute to building a digital culture of accountability and trust, fostering improved student engagement and academic outcomes (Okafor & Eze, 2022).

Table 2 above shows Z-test Analysis on the extent teachers and students on the extent to which teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The result on the table 4 further showed a z-calculated value of 0.58 which was less than the z-critical value of ± 1.96 at 0.05 level of significance and with a degree of freedom of 725, since the z-calculated (0.58) was less than the z-tabulated (± 1.96), the null hypothesis was accepted which states that there is no significant difference between the mean opinion scores of teachers and students on the extent teachers and students on the extent to which teachers' equity and inclusion in AI Application influence students' academic performance in public

secondary schools in Port Harcourt Metropolis, Rivers State. This result was in line with that of Ibrahim and Njoku (2023) who opined that, teachers play a pivotal role in translating these values into practice by ensuring that AI tools are used in ways that are fair, unbiased, and accessible to every learner, regardless of their background, gender, socioeconomic status, or learning abilities. When educators are intentional about inclusive AI integration, they help mitigate disparities that often arise from unequal access to technology and digital content.

Conclusion

Based on the findings of the study, the researcher concludes that, teachers' competence in data privacy and confidentiality and teachers' equity and inclusion in AI Application influence students' academic performance in public secondary schools in Port Harcourt Metropolis, Rivers State. The integration of Artificial Intelligence (AI) in public senior secondary schools presents a transformative opportunity to enhance students' academic performance through personalized learning, efficient assessment, and data-informed instructional strategies. However, the realization of these benefits is largely dependent on the ethical competence of teachers who serve as facilitators of AI applications in the classroom. Teachers' ability to uphold principles of fairness, privacy, transparency, and inclusivity in AI usage is vital to fostering a learning environment that is both technologically advanced and morally sound. When teachers demonstrate high ethical standards in deploying AI tools, students are more likely to trust and engage with these systems, leading to improved academic outcomes and reduced disparities in educational opportunities.

Recommendations

The following recommendations were made that:

1. Based on the findings that teachers' ethical competence significantly influences the successful integration of AI in enhancing students' academic performance, it is recommended that the Rivers State Ministry of Education, in collaboration with teacher training institutions, develop and implement mandatory training programs focused on ethical issues in educational AI application. These programs should cover key areas such as data privacy, algorithmic bias, equity, inclusivity, and responsible AI usage in the classroom. Continuous professional development workshops should be institutionalized to ensure that teachers remain updated on evolving ethical standards and best practices in AI-enhanced teaching and learning. This will equip educators with the moral and technical competence necessary to use AI tools in ways that support fair, transparent, and effective student learning outcomes.
2. To support teachers in maintaining high ethical standards, the state government and educational policymakers should formulate comprehensive ethical guidelines that govern the use of AI in public senior secondary schools. These guidelines should clearly outline acceptable practices in data collection, AI tool selection, privacy protection, and student engagement. Additionally, a monitoring and evaluation framework should be established to assess how well teachers adhere to these ethical standards and how AI integration is impacting student performance. This would help ensure accountability, promote uniform implementation across schools, and encourage ethical leadership among educators, thereby optimizing the academic benefits of AI for all students.

References

- Adeleke, B. O., & Musa, M. A. (2023). Teachers' data competence in digital learning environments: A pathway to student success. *Journal of Educational Leadership and Ethics*, 11(2), 74–86.
- Aliyu, H. T., & Gambo, S. A. (2023). Legal compliance and data privacy in AI-based education systems in Nigeria. *African Journal of Educational Policy and Administration*, 9(1), 102–117.
- Boma, G. S., & Adekola, M. T. (2023). Assessing the impact of education policies on academic performance in Rivers State public schools. *Journal of Policy and Educational Development*, 8(1), 45–59.



- Chukwu, E. C., & Benson, R. O. (2023). Ethical challenges in the application of artificial intelligence in Nigerian classrooms. *Journal of Educational Innovation and Practice*, 9(2), 41–53.
- Emeka, T. A., & Ibrahim, M. S. (2023). Artificial intelligence integration in public secondary schools: Teachers' preparedness and ethical implications. *African Journal of Digital Education*, 5(1), 23–34.
- Ezeanya, U. J., & Balogun, K. T. (2024). Teachers' inclusive competence in AI-assisted learning and its impact on student performance in Nigerian public schools. *Journal of Educational Technology and Equity*, 5(1), 66–79.
- Ezeanya, U. J., & Balogun, K. T. (2024). Teachers' inclusive competence in AI-assisted learning and its impact on student performance in Nigerian public schools. *Journal of Educational Technology and Equity*, 5(1), 66–79.
- Fagbamigbe, A. O. (2023). The ethics of artificial intelligence in education: A framework for teacher competence. *West African Journal of Educational Research*, 7(3), 88–97.
- Ibimina, C. O., & Wokocha, E. C. (2023). Classroom environment and students' academic achievement in urban public schools in Port Harcourt. *Nigerian Journal of Urban Educational Studies*, 5(2), 78–91.
- Ibrahim, O. G., & Njoku, C. E. (2023). Equity and access in AI-powered classrooms: The teacher's role in bridging digital divides. *Nigerian Journal of Emerging Educational Technologies*, 7(3), 45–58.
- Ibrahim, O. G., & Njoku, C. E. (2023). Equity and access in AI-powered classrooms: The teacher's role in bridging digital divides. *Nigerian Journal of Emerging Educational Technologies*, 7(3), 45–58.
- Kio, O. D., & Amadi, N. R. (2023). Insecurity and its effects on teaching and learning in Rivers State public secondary schools. *African Journal of Educational Security and Development*, 6(1), 32–47.
- Lawal, R. A., & Dogo, M. I. (2023). Teachers as gatekeepers of inclusive AI learning in secondary schools. *African Review of Education and Digital Inclusion*, 6(2), 93–105.
- Lawal, R. A., & Dogo, M. I. (2023). Teachers as gatekeepers of inclusive AI learning in secondary schools. *African Review of Education and Digital Inclusion*, 6(2), 93–105.
- Nwachukwu, L. N., & Tella, S. A. (2024). Promoting fairness and academic achievement through inclusive AI practices in Nigerian classrooms. *Journal of Inclusive Digital Education*, 3(1), 27–40.
- Nwachukwu, L. N., & Tella, S. A. (2024). Promoting fairness and academic achievement through inclusive AI practices in Nigerian classrooms. *Journal of Inclusive Digital Education*, 3(1), 27–40.
- Nwokike, F. O., & Okonkwo, U. L. (2024). Data ethics and artificial intelligence in secondary schools: The teacher's role. *International Journal of Education and Digital Ethics*, 6(1), 101–115.
- Okafor, N. D., & Eze, C. L. (2022). Teachers' digital ethics and students' academic engagement in Nigerian secondary schools. *International Journal of Digital Literacy in Education*, 4(2), 56–68.
- Oke, J. T., & Abayomi, S. M. (2023). Artificial intelligence and students' academic performance in Nigerian secondary schools: Opportunities and limitations. *Nigerian Journal of Educational Technology*, 10(4), 55–68.
- Tamunotonye, R. A., & Okorie, E. I. (2024). Influence of teacher effectiveness and parental support on students' performance in Port Harcourt public secondary schools. *Journal of Contemporary Issues in Educational Research*, 7(2), 63–75.
- UNESCO. (2023). Guidance for generative AI in education and research. United Nations Educational, Scientific and Cultural Organization. <https://unesdoc.unesco.org/>
- Yusuf, A. M., Onuoha, J. A., & Bello, K. R. (2024). Ethical awareness in AI implementation and its effect on student learning outcomes. *Nigerian Journal of Educational Management and Technology*, 6(1), 35–49.