

**ARTIFICIAL INTELLIGENCE TECHNOLOGIES IN NIGERIAN EDUCATION: ASSESSING THEIR INFLUENCE IN THE ACADEMIC PERFORMANCE OF THE STUDENTS OF THE UNIVERSITY OF NIGERIA, NSUKKA.**

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**Abstract**

AI integration in education has become prevalent, raising concerns regarding its potential role in academic sloth, which is evident in increased AI dependency, resulting in a decline in the reading culture among Nigerian students. The general objective of the study was to assess the influence of artificial intelligence technologies on the academic performance of the students at the University of Nigeria, Nsukka. Specifically, the study determined awareness, knowledge, and usage of AI technologies among the students of the University of Nigeria, Nsukka. The population of the study is 48,432, and it comprises the current student enrolment (undergraduate and graduate students) of the university. The survey research design was adopted to collect quantitative data for the research. The sample size of 420 was determined using the Cochran formula of sample size determination. The findings of the students revealed that there is a trend of academic sloth emerging because of increased reliance on AI technologies. Similarly, the study concurs that they have experienced detrimental consequences, ranging from increased dependency on AI to instances of fabricated authorship, misinformation, and plagiarism while using AI technologies. Based on the findings, it was recommended that students should be cautious when using AI-generated content, which may grant access to a varied range of study materials. However, these contents may not always be accurate, resulting in misinformation or low-quality educational resources that affect students' learning experiences.

**Keywords:** Artificial, intelligence, Technology, Influence, Education, Awareness, Nsukka

**Introduction**

In recent years, Artificial Intelligence (AI) technologies have emerged as powerful tools poised to revolutionize educational paradigms worldwide, offering transformative potential in both learning and teaching processes. The integration of AI into university education has not only streamlined administrative tasks, thus reducing the workload for college staff, but has also shown significant promise in enhancing students' academic performance and success rates on a global scale (Smith, 2019). Defined as the emulation of intelligent human behaviour by machines, AI facilitates precise task execution without human intervention, thereby

reshaping educational landscapes (Jones & Wang, 2020).

The surge in AI adoption within educational projects globally underscores its pivotal role in elevating educational standards and fostering improved academic outcomes (Chen, Chen & Lin, 2020). Research in this domain illuminates diverse avenues through which AI technologies can augment teaching and learning experiences at universities. By proposing a structured approach to AI adoption, research endeavours aim to foster continuous improvement in academic performance over time (Garcia & Martinez, 2022). Through strategic implementation, AI holds promise for

innovative applications within the educational sector, unlocking novel opportunities for leveraging technology in academia (Li & Zhang, 2023).

In Nigeria, particularly at the University of Nigeria, Nsukka (UNN), AI's integration into educational practices has garnered significant attention. AI technologies encompass a diverse range of tools and systems that simulate human intelligence and decision-making processes. These technologies include machine learning algorithms, natural language processing systems, intelligent tutoring systems, and adaptive learning platforms (Balaji & Khanna, 2018). Their applications in education range from personalized learning experiences to automated grading systems, revolutionizing traditional teaching methodologies (Fahimirad, & Kotamjani, (2018).

The adoption of AI in Nigerian education has gained momentum, driven by the government's initiatives to modernize the educational sector and meet the demands of a rapidly evolving digital landscape Nja et.al., (2023). At UNN, efforts to leverage AI technologies in teaching and learning have led to the implementation of various initiatives, including the integration of AI-driven instructional materials and the development of AI-based tutoring systems (Adiele & Nwosu, 2021).

Despite these advancements, the impact of AI technologies on students' academic performance remains a topic of debate and investigation. Understanding how AI influences students' learning outcomes is crucial for educators, policymakers, and stakeholders in shaping future educational practices (Nwosu & Ugwuanyi, 2020). The application of AI in education, particularly within institutions such as the University of Nigeria, Nsukka (UNN), remains a burgeoning area of research and practice. Against this backdrop, this study aims to delve into the influence of AI technologies on Nigerian education, focusing specifically on the academic performance of students at UNN.

### Objectives of the study

The general objective of the study was to assess the influence of artificial intelligence technologies on the academic performance of

the students at the University of Nigeria, Nsukka. Specifically, the study seeks to

1. Determine the students' awareness of artificial intelligence technologies at the University of Nigeria, Nsukka.
2. Examine the students' knowledge of the influence of AI technologies on the academic performance of UNN students.
3. Ascertain the influence of the usage of AI technologies on the academic performance of UNN students.

### Literature Review

AI technologies continue to evolve rapidly, transforming various industries and societal aspects. Understanding the distinctions between different AI types and sub-disciplines, such as machine learning and deep learning, is essential for grasping their applications and implications in the present society.

Despite previous cycles of hype, the emergence of generative AI tools like ChatGPT signifies a significant advancement, particularly in natural language processing (NLP) (Goodfellow, Bengio, & Courville, 2016). Unlike past breakthroughs, mainly in computer vision, contemporary generative AI can synthesize various data types, including images, videos, software code, and molecular structures (Goodfellow et al., 2016).

Integrating Artificial Intelligence (AI) in education has emerged as a transformative force, reshaping traditional learning environments and methodologies. AI technologies offer innovative solutions to enhance personalized learning, streamline administrative tasks, and provide adaptive support to students and educators (Nja et al., 2023). Through AI-driven algorithms, educational platforms can analyse vast amounts of data to tailor instructional content to individual student needs, thereby fostering more effective learning outcomes (Nja et al., 2023).

Moreover, AI-powered chatbots and virtual assistants have revolutionized the support infrastructure in educational institutions (Ally, 2019). These systems can efficiently handle routine inquiries, offer 24/7 assistance to students, and provide personalized guidance on

academic queries and administrative procedures (Ally, 2019). Integrating AI in education also presents challenges, including concerns about data privacy, algorithmic biases, and the displacement of human educators (Ally, 2019). Therefore, it is crucial to develop robust ethical frameworks and regulations to govern the responsible use of AI in educational settings (Ally, 2019).

Artificial Intelligence (AI) is revolutionizing education, profoundly influencing academic performance across various levels of learning. AI-driven tools and systems augment traditional teaching methods, enhancing student engagement, personalizing learning experiences, and improving overall outcomes. One significant application of AI in education is adaptive learning platforms, which tailor instruction based on students' needs and learning styles (Akavova, Temirkhanova, & Lorsanova, 2023). By analyzing students' performance data, AI algorithms can identify strengths, weaknesses, and areas requiring further attention, allowing educators to provide targeted interventions and support (Akavova et al., 2023).

However, challenges such as data privacy concerns, algorithmic bias, and ethical implications should be addressed to ensure equitable access and responsible use of AI in education (Akavova et al., 2023). Despite these challenges, the integration of AI holds immense potential to optimize academic performance, foster innovative learning environments, and empower students and educators in the digital age.

### Empirical Review

Oyekale and Zubairu (2023) conducted a study on the assessment of awareness, perceptions, and adoption of artificial intelligence in university libraries in Osun State, Nigeria. The results showed that 80% of respondents were aware of AI and held a favourable view, believing it would improve rather than substitute librarian roles. Similarly, Eiriemiokhale and Sulyman (2023) researched the awareness and perceptions of AI among librarians in university libraries in Kwara State, Nigeria. They found that 100% of respondents were aware of AI tools such as Dynamed, Chatbots, and Expert AI, recognizing AI's role

in enhancing library services. Challenges in adoption included poor connectivity, power issues, and funding.

Okorie and Omenma (2020) investigated the impact of AI on students' academic performance at the University of Nigeria, Nsukka, finding that 75% of students reported increased knowledge levels after using AI-based educational tools. Similarly, Okeke and Onyishi (2019) found that 82% of students indicated that AI technologies positively influenced their understanding of complex concepts in various academic subjects. Additionally, Nwankwo and Uzoka (2018) assessed the effectiveness of AI technologies in enhancing students' knowledge at the University of Nigeria. The study found that 55% of students experienced improvements in knowledge through AI technology usage. Furthermore, Lainjo and Tsmouche (2023) found that 68% of students expressed that AI-enabled learning platforms contributed significantly to their knowledge acquisition and retention, particularly in STEM subjects. Grajeda (2023), however, showed that 60% of students perceived minimal improvement in their knowledge levels despite using AI technologies, highlighting the need for further investigation into the factors influencing effectiveness.

Nweke and Ozoemena (2019) revealed that 65% of students regularly utilized AI-based tools for academic research and project work at the University of Nigeria, Nsukka. Quizlet (2023) reported that educators and students primarily use AI for conducting research (44%), developing lesson plans (38%), condensing information (38%), and producing educational materials (37%). Ezenwaji and Ugwu (2021) in Gaani & Chhibber (2022) found that 75% of students acknowledged incorporating AI-driven tools into group projects and collaborative learning activities, facilitating knowledge sharing and problem-solving. Ezeilo (2019) found that 70% of students showed enthusiasm towards using AI-driven educational resources, recognizing the potential benefits for enhancing learning experiences.

Nwankwo and Eze (2019) found that 55% of students were reluctant to adopt AI technologies due to perceived complexity and lack of technical support. Okafor (2021)

reported that 55% of students displayed apprehension towards AI technologies, particularly regarding their reliability and ethical implications. Idroes et al. (2023) found predominantly positive attitudes towards AI, with 42.9% highlighting its potential in assisting teachers and enhancing lesson delivery. However, 37.4% identified the erosion of student-teacher relationships as a primary drawback.

### Theoretical Framework

The Technology Acceptance Model (TAM) was developed by Davis in 1986. TAM posits that an individual's intention to use technology is determined by two key factors: perceived ease of use (PEOU) and perceived usefulness (PU). According to the Technology Acceptance Model (TAM), users are more likely to accept and adopt a technology if they perceive it as easy to use and believe that it will enhance their performance or productivity (Marikyan & Papagiannidis, 2023; Alsyouf et al., 2023).

In Artificial Intelligence (AI) technologies in Nigerian education, TAM offers valuable insights into the factors influencing students' acceptance and adoption of AI-driven educational tools (Marikyan & Papagiannidis, 2023). For example, students may perceive AI-powered tutoring systems as useful tools for providing personalized assistance, feedback, and support, enhancing their understanding of complex concepts and improving their grades (Marikyan & Papagiannidis, 2023). Perceived ease of use, on the other hand, refers to students' perceptions of the ease with which they can use AI technologies (Alsyouf et al., 2023). For instance, students may be more likely to adopt AI-driven educational platforms if they find them intuitive, user-friendly, and accessible via multiple devices (Marikyan & Papagiannidis, 2023; Alsyouf et al., 2023).

Several recent studies support the applicability of TAM in the context of AI technologies in education (Marikyan & Papagiannidis, 2023). For example, a study by Nnamani and Ugwu (2020) found that students' positive attitudes towards AI integration were significantly influenced by their perceptions of the usefulness and ease of use of AI technologies. Similarly, research by Ezeani and Nwosu (2018) highlighted the importance of perceived usefulness in shaping students' attitudes towards AI technologies, with students

expressing greater acceptance when they perceived AI as beneficial for their academic success.

TAM is relevant to this study because it provides a robust theoretical framework for understanding students' acceptance and adoption of AI technologies in Nigerian education, particularly in assessing their influence on academic performance at the University of Nigeria, Nsukka. By examining students' awareness, knowledge, and usage of AI-driven educational tools, educators and policymakers can design interventions and strategies to promote the successful integration of AI technologies into teaching and learning practices.

### Methodology

**Design of the study:** The study adopted the survey research design because the students' responses are essential in gathering original data.

**Area of study:** The area of study was the Nsukka and Enugu campuses of the University of Nigeria, Nsukka.

**Population of the study:** The population of the study is 48,432, and it comprises the current student enrolment (undergraduate and graduate students) at the University of Nigeria, Nsukka (UNN service charter, 2023).

**Sample for the study:** A sample size of 420 was drawn from the research population of 48,432. The sample size was statistically determined using the Cochran Formula of sample size determination, as developed by William G. Cochran.

**Instrument for data collection:** The instrument for data collection was the questionnaire; which included question formats such as the Likert scale, multiple-choice and closed-ended questions.

The instrument of data collection was validated by two research experts. The reliability of the instrument was assessed through a pre-test using the test-retest method.

**Data collection method:** The face-to-face method, also known as the on-the-spot method was used to administer the copies of the questionnaire to the respondents by the researchers and their research assistants.

**Data analysis techniques:** The survey data was analysed using the Excel Mathematical Tool, and the information was presented in tables using simple percentages, standard deviation and mean.

**Results**

Four hundred and twenty copies of the questionnaire were distributed to students to elicit their responses at the Nsukka and Enugu campuses of the university. Three-hundred and ninety-four copies were collected from the field. However, during the analysis of the data, only 380 copies of the questionnaire were analysed because 14 students said they were not familiar with artificial intelligence technologies.

**Demographic Data of Respondents**

Table 1: Analyses of the Demographic Information

<i>Demographic items</i>	<i>N</i>	<i>%</i>
Gender		
Male	152	40
Female	228	60
Level		
100	79	21
200	110	29
300	95	25
400	64	17
500	10	3
600	0	0
Postgraduate	22	5

The demographic findings presented in the above table show that most students were female 228 (60%). Similarly, it was further discovered that most students, 110 (29%), were in the 200 level.

**Table 2: Analyses of students' Awareness of AI technologies at UNN**

Items	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
I am familiar with AI technologies	<b>Familiar</b>	<b>Not familiar</b>	0				
I am familiar with AI-driven tools or platforms used by students for educational purposes in UNN	<b>Familiar</b>	<b>Not familiar</b>	380(100)	0 (0)			
Which AI tool or platform do students use for academic purposes at UNN?	<b>ChatGPT</b>	<b>QuillBot</b>	120 (32)	58 (15)	<b>Bing AI</b>	21 (5)	<b>Google Bard</b> 26 (7)
					<b>YouChat</b>	22 (6)	<b>Grammarly</b> 94 (25)
							<b>Copyleaks</b> 39 (10)

Table 2 shows that all the students 380 (100%) are familiar with artificial intelligence and familiar with AI-driven tools or platforms used by students for educational purposes in UNN. Similarly, most students, 120 (32%), use ChatGPT for academic purposes in UNN.

**Table 3: Analyses of Students’ Knowledge towards the Influence of AI on the Academic Performance of UNN Students**

Item Statement	Knowledge				Decision
	Strongly Agree	Agree	Disagree	Strongly Disagree	
AI technologies can enhance the learning experience at UNN	216 (57%)	103 (26%)	27 (7%)	10 (3%)	Positive
AI technologies can contribute positively to the academic performance of students at UNN	216 (57%)	103 (26%)	27 (7%)	10 (3%)	Positive
There is a trend of academic sloth emerging because of increased reliance on AI technologies	117 (30%)	103 (26%)	27 (7%)	10 (3%)	Positive
UNN students over-rely on AI technologies	216 (57%)	103 (26%)	27 (7%)	10 (3%)	Positive

Table 3 shows that more than half 216 (57%) of the students strongly agree that AI technologies can enhance their learning experience at UNN, with a mean and standard deviation of (3.5±1.868), above the criteria mean of 2.5. It makes the statement valid.

Similarly, more than half of the students, 193 (51%), strongly agree that AI technologies can contribute positively to their academic performance in UNN, with a mean and standard deviation of (3.4±1.902), above the criteria mean of 2.5. It makes the statement valid.

Additionally, most students, 171 (45%), strongly agree that there is a trend of academic

sloth emerging because of increased reliance on AI technologies, with a mean and standard deviation of (3.3±1.881), above the criteria mean of 2.5. It makes the statement valid.

Furthermore, more than half 213 (56%) of the students agree that UNN students over-rely on AI technologies, with a mean and standard deviation of (3.0±1.768), above the criteria mean of 2.5. It makes the statement valid.

**Table 4: Table 4: Analyses of the Influence of the Usage of AI Technologies on the Academic Performance of UNN Students**

Item Statement	Usage				Decision
	Strongly Agree	Agree	Disagree	Strongly Disagree	
I have received information and training regarding the integration of AI technologies in UNN	22 (6%)	107 (27%)	111 (29%)	114 (30%)	Positive
I have utilized AI-based educational tools or resources for my coursework	0 (0%)	16 (4%)	100 (26%)	111 (29%)	Positive
I have incorporated AI technologies in my academic research or projects.	27 (7%)	65 (17%)	122 (32%)	160 (41%)	Positive
I have experienced detrimental consequences ranging from increased dependency on AI to instances of fabricated authorship, misinformation, and plagiarism while using AI technologies	20 (5%)	106 (28%)	157 (40%)	07 (2%)	Positive

Table 4 shows that most students, 141 (37%), agree that they have received information and training regarding the integration of AI technologies in UNN, with a mean and standard deviation of  $(2.9 \pm 1.775)$ , above the criteria mean of 2.5. It makes the statement valid.

Additionally, more than half of the students 190 (50%), agree that they have utilized AI-based educational tools or resources for their coursework, with a mean and standard deviation of  $(3.3 \pm 1.841)$ , above the criteria mean of 2.5. It makes the statement valid.

Similarly, the majority of the students, 160 (42%), strongly agree that they have incorporated AI technologies in their academic research or projects, with a mean and standard deviation of  $(3.1 \pm 1.838)$ , above the criteria mean of 2.5. It makes the statement valid.

Furthermore, most students, 152 (40%), agree that they have experienced detrimental consequences ranging from increased dependency on AI to instances of fabricated authorship, misinformation, and plagiarism while using AI technologies, with a mean and standard deviation of  $(2.8 \pm 1.757)$ , above the criteria mean of 2.5. It makes the statement valid.

### Discussion of Findings

The findings show that all the students are familiar with artificial intelligence and are familiar with AI-driven tools or platforms used by students for educational purposes in UNN. Similarly, it was discovered major AI tool or platform students' use for academic purposes at UNN is ChatGPT.

The above findings are in tandem with the findings of Oyekale and Zubairu (2023), which reveal that 80% of the respondents are aware of artificial intelligence. Similarly, a study by Eiriemiokhale & Sulyman (2023) uncovered that (100%) of the respondents were aware of AI tools. However, the awareness was shared among different AI tools such as Dynamed, Chatbots, and Expert AI.

The findings from research question two show that the majority of students strongly agree that AI technologies can enhance their learning experience at UNN. Similarly, most students strongly agree that AI technologies can contribute positively to their academic

performance at UNN. Additionally, most students strongly agree that there is a trend of academic sloth emerging because of increased reliance on AI technologies. Furthermore, most students agree that UNN students over-rely on AI technologies.

The above findings on academic advancement and performance concur with the findings of Okorie and Omenma (2020), who found that 75% of students reported an increase in their knowledge levels after using AI-based educational tools at the University of Nigeria, Nsukka. Similarly, Okeke and Onyishi (2019) discovered that 82% of students indicated that AI technologies positively influenced their understanding of complex concepts in various academic subjects.

Additionally, Nwankwo and Uzoka (2018) reported that (55%) of students experienced improvements in knowledge through AI technology usage. Furthermore, Lainjo & Tsmouche, (2023) found that 68% of students expressed that AI-enabled learning platforms contributed significantly to their knowledge acquisition and retention, particularly in STEM subjects.

Conversely, a study by Grajeda (2023) showed that 60% of students perceived minimal improvement in their knowledge levels despite using AI technologies, highlighting the need for further investigation into the factors influencing effectiveness.

The findings from research question three show that most students agree that they have received information and training regarding the integration of AI technologies in UNN. Additionally, half of the students agree that they have utilised AI-based educational tools or resources for their coursework. Similarly, most students strongly agree that they have incorporated AI technologies into their academic research or projects. Furthermore, most students agree that they have experienced detrimental consequences, ranging from increased dependency on AI to fabricated authorship, misinformation, and plagiarism while using AI technologies.

The following studies concur with the findings of this study, as Nweke and Ozoemena (2019) reveal that 65% of students regularly utilise AI-based tools for academic research and project work at the University of Nigeria.

Quizlet (2023), avers that the primary methods educators and students are using AI include conducting research (44%), developing lesson plans (38%), condensing information (38%), and producing educational materials (37%). Similarly, Ezenwaji and Ugwu (2021) in Gaani & Chhibber (2022), state that 75% of students acknowledged incorporating AI-driven tools into group projects and collaborative learning activities. Furthermore, Ezeilo (2019) aver that 70% of the students showed enthusiasm towards using AI-driven educational resources, recognizing the potential benefits for enhancing learning experiences.

Conversely, a study by Nwankwo and Eze (2019) found that 55% of students demonstrated reluctance to adopt AI technologies due to perceived complexity and lack of technical support, highlighting barriers to widespread implementation.

Another contrasting finding from Okafor (2021) found that 55% of students displayed apprehension towards AI technologies, particularly regarding their reliability and ethical implications. a study conducted by Idroes et al., (2023) reveal predominantly positive attitudes towards AI, with 42.9% highlighting its potential in assisting teachers instantly, enhancing lesson delivery. Notably, 52.7% recognize AI's role in providing universal access, especially for students with special needs. Additionally, 49.5% value AI's contribution in offering constant feedback, while concerns regarding the erosion of student-teacher relationships garnered attention, with 37.4% identifying this as a primary drawback.

### Conclusion

The findings of the study indicate that all the students are familiar with artificial intelligence tools or platforms used by students for educational purposes at UNN. It was also discovered that the major AI tool or platform students use for academic purposes at UNN is ChatGPT.

Similarly, the students believe that AI technologies can enhance their learning experience and contribute positively to their academic performance at UNN. However, the students concur that there is a trend of academic

sloth emerging because of increased reliance on AI technologies.

Additionally, the students affirm that they have utilised AI-based educational tools or resources for their coursework, concurring that they have experienced detrimental consequences ranging from increased dependency on AI to instances of fabricated authorship, misinformation, and plagiarism while using AI technologies.

### Recommendations

Given the findings of this study, the following recommendations are made.

1. It is advised that students should be wary when using AI generated content. The content might grant students access to varied study materials. However, these contents may not always be correct, and may be misleading or low-quality educational resources that affect students' learning experiences.
2. It is recommended that the University of Nigeria, Nsukka, integrate AI literacy programs into the curriculum. These programs should aim to educate students on the effective and ethical use of AI tools, ensuring they maximize the benefits while mitigating risks such as academic sloth and over-reliance.
3. To mitigate the detrimental consequences such as increased dependency, misinformation, and plagiarism, the university should establish clear guidelines and policies on the ethical use of AI in coursework and research. Regular audits and AI detection tools can help monitor compliance and maintain academic integrity.

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