

ASSESSMENT OF THE LEVEL OF UNIVERSITY LECTURERS IN THE USE OF ARTIFICIAL INTELLIGENCE TOOLS FOR TEACHING AND RESEARCH

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Abstract

This study assessed the level of university lecturers in the use of artificial intelligence for teaching and research. The research design adopted in the study was descriptive survey of correlational type. The population of the study covered all lecturers in all universities in North Central Geo-Political Zone in Nigeria. Multi stage sampling technique was used in the study to select the respondents. The instrument used in the study was adapted from Ukeh and Aniah (2024) titled “Artificial Intelligence level of use among Nigerian university lecturers (AIULNUL). The instrument was divided into four aspects: the general level of AI tools usage for teaching and research among university lecturers in Nigeria; the relationship between AI tools usage for teaching and research and lecturers’ productivity; relationship between AI tools usage for teaching and research on university lecturers’ research engagement and relationship between AI tools usage for teaching and research on Nigerian university lecturers’ teaching engagement. All instruments were validated using Cronbach Alpha the reliability coefficients of 0.83, 0.76, 0.82 and 0.79 were generated. The descriptive statistic tools used in the study were mean and standard deviation while Pearson Product Moment Correlation (PPMC) was inferential statistical tool used. The findings of the study revealed that Nigerian university lecturers’ level of use of AI for teaching and research was moderate. The finding also discovered that there was no significant relationship between AI level of usage and Nigerian university lecturers’ productivity, research and teaching engagements. The study concluded in the study that University lecturers’ level of use of artificial intelligence enhance their productivity and proficiency in teaching and research. Therefore, the study recommended that Nigerian University managements should organize series of workshops and seminars on the effective ways of using artificial intelligence tools for teaching and research.

Key Words: Assessment, artificial intelligence tools, University lecturer, teaching, research,

Introduction

The use of artificial intelligence for teaching and research has become a welcome idea globally. Teaching and learning become simpler, easier, accessible and assessable with the aid of artificial intelligence tools. Ukeh and Aniah (2024) described the emergence of artificial intelligence in the world as transformative and innovative changes to provide effective solutions to complex problems in all sectors of human endeavours including education. Artificial intelligence possesses ability to leverage algorithms and data to behave, act, react and perform like natural human beings (Russell & Norvig 2010). Thus,

it performs certain cognitive functions to improve teaching, learning and research activities in the field of education which are unprecedented (Baigi, et al. 2023).

A number of tools had been developed in the field of artificial intelligence to streamline teaching, learning and research in education sector. According to Ukeh and Aniah (2024), the AI tools developed in the field of education include; Intelligent Tutoring System (ITS), Adaptive Learning Platform (ALP), Virtual Reality (VR), Chabot and Virtual Assistant (VA), Natural Language Processing (NLP) and Intelligent Content Creation Tools (ICCT). Ofem et al. (2024) explained that GhatGPT is a vibrant artificial intelligence tool that can afford lecturers and students profound opportunities to revolutionise teaching, learning and research. Similarly, Jetilani et al. (2023) submitted that artificial intelligence tools such as intelligent tutoring system, voice assistance and grading software are gaining high level of usage in the field of education.

In order to demonstrate the significance of AI tools in simplifying teaching, learning and research in the field of education, Silvia (2023) highlighted the following:

1. Intelligent writing and translator tools can facilitate and enrich effective teaching and learning in the universities. These tools can translate from one language to another, recognize different sounds and voices.
2. Virtual assistance can perform numerous functions such as answering questions, providing expected feed backs and giving effective guidance.
3. Chatbots are capable of bringing new innovations and techniques in to the field of education in such as conversation, transaction, and preparing query and re-query letters among others.
4. Adaptive learning system is highly effective in analysis learners' strengths, weakness and way forwards. This is very interesting nowadays, to make learning environment closer, easier and simpler for the recipients.
5. Content generation tools can also make teaching, learning, research and administrative works easier because they perform excellently in constructing texts, forming images and preparing compositions.

The use of artificial intelligence for teaching and research in the universities is expected to have gained high compliance from the lecturers in the field of education. Almost all artificial intelligence tools developed can render tremendous services to the work of teaching and research in the universities. AI tools such as ChatGPT, Intelligent Tutoring System (ITS), Adaptive Learning Platform (ALP), Virtual Reality, Chabot and Virtual Assistant, Natural Language Processing (NLP) and Intelligent Content Creation Tools are very germane and relevant to education. It is against this background that the present study intended to assess the level of Nigerian university lecturers in the use of artificial intelligence tools for teaching and research.

Research Purpose

The main purpose of this study was to assess the level of university lecturers in the use of artificial intelligence tools for teaching and research. Specifically, the study:

1. Examined the general level of artificial intelligence tools usage for teaching and research among university lecturers in Nigeria
2. Investigate the relationship between artificial intelligence tools usage and university lecturers' productivity.
3. Assess the relationship between artificial intelligence tools usage and university lecturers' research engagement.

4. Find out the relationship between artificial intelligence tools usage and university lecturers' teaching engagement.

Research Questions

The following questions were answered during the course of the study.

1. What is the general level of artificial intelligence tools usage for teaching and research among university lecturers in Nigeria?
2. Does the use of artificial intelligence tools relate to university lecturers' productivity?
3. Is there any relationship between artificial intelligence tools usage and university lecturers' research engagement?
4. Is there any relationship between artificial intelligence tools usage and university lecturers' teaching engagement?

Research Hypotheses

The following hypotheses were tested during the course of this study:

H01: there is no significant relationship between artificial intelligence tools usage and university lecturers' productivity.

H02: there is no significant relationship between artificial intelligence tools usage and university lecturers' research engagement.

H03: there is no significant relationship between artificial intelligence tools usage and university lecturers' teaching engagement.

Literature Review on the Level of University Lecturers' Use of Artificial Intelligence Tools for Teaching and Research

The use of artificial intelligence tools for teaching and research in Nigerian tertiary institutions is expected to have reached apex in the aspects of awareness, compliance, usability and inclusion. Madu and Musa (2024) worked on lecturers' awareness of artificial intelligence and their digital competence. The study thus, found that there was positive correlation between lecturers' awareness of artificial intelligence and their digital competence in Nigeria. In a similar view, Eirimiokale and Sulyman (2023) submitted that there is positive awareness of artificial intelligence tools among university librarians in Kwara State, Nigeria. However, Amadi-Iwai et al. (2024) discovered low level of awareness of artificial intelligence among Business Educators in universities in South-South Nigeria.

Furthermore, Ofem et al. (2024) submitted that there was high level of lecturers' compliance and use of artificial intelligence for research in university of Calabar, Nigeria. Rasul et al. (2023) was of the opinion that the level of artificial intelligence tools is becoming higher among the lecturers and students due to its unprecedented significances in facilitating teaching, learning and research. Uken and Aniah (2024) carried out research on utilization of artificial intelligence tools for teaching and research among lecturers in Federal University Otuoke, Bayelsa State, Nigeria. The study revealed that there was a low level of adoption of artificial intelligence tools for teaching and research among the lecturers in the university. In the same vein, another study showed that there was low level of utilization of artificial intelligence tools for teaching and research among lecturers in Nigerian universities (Thomas & Gambari, 2021).

Afiya (2023) concluded that the level of adoption and utilization of artificial intelligence tools for teaching in Nigeria is very high, although its implementation requires series of considerations such as ethical, social, technical and cultural factors among others. It could be understood from the above statement that implementation of artificial intelligence tools for teaching and research is highly encouraged in order to meet the needs of the present society and global demands. According to Olatunde-Aiyedun (2024), the rapid advancement in the use of artificial intelligence tools at all sectors in Nigeria including education had yielded profound transformative impacts across all sectors of human endeavours. The study explained that artificial intelligence tools perform works which man can do perfectly without wasting much of time. In the same vein, the use of artificial intelligence aids lecturers' level of proficiency and productivity (Olatunde-Aiyedun & Hamma, 2023). Similarly, Ukeh and Anih (2024) submitted that the lecturers' level of use of artificial intelligence for teaching and research was very low and the study recommended that lecturers should be enjoined to harness artificial intelligence based tools to enhance learning experiences and streamline research processes.

Furthermore, Diala et al. (2024) reported that teaching and learning of English Language nowadays has become easier with the aids of artificial intelligence tools. The study further discovered that there was significant relationship between artificial intelligence and English Language teaching and library practices among lecturers in Nigerian Universities. In addition, Solihu (2024) demonstrated that the level of lecturers' use of AI tools for teaching and research differs based on their areas of specialization. The study explained further that lecturers from Faculties of Engineering, Medical Sciences, Natural Sciences and Business' level of usage felt within the range between 20% and 40% while Faculties of Social Sciences, Law, Education, Humanities and Arts and Designs maintained the range between 5% and 20%. This implies that lecturers from Faculty of Education are not conversant to the use of AI tools for teaching and research. Thus, Gaber et al. (2023) suggested that lecturers in the universities should increase their level of digital literacy in order to be more competent in the use of artificial intelligence for teaching and research.

Methodology

This study assessed the level of Nigerian university lecturers in the use of artificial intelligence tools for teaching and research. Descriptive survey research design of correlational type was used in the study. The population of the study comprised all lecturers in all universities in Nigeria. Simple random sampling technique was adopted to sample three states from all states representing North-Central Geo-political Zone in Nigeria. Thus, Kwara, Kogi and Niger States were selected for the study. More so, simple random sampling technique was used to select three universities from each selected states in North Central. Therefore, 9 nine universities were sampled in the study from North-Central Geo-political Zone States. The samples were taken from Federal, State and private universities. Furthermore, simple random sampling was used to select three Faculties from all Faculties available in each university sampled. Therefore, Faculties of Education, Engineering and Humanities were sampled. Similarly, simple random sampling technique was used to select 2 Departments from each sampled Faculty. Thus, 54 Departments were used in the study. However, convenience sampling technique was used to select 5 lecturers from each Department.

The instrument used in this study was an adapted questionnaire from Ukeh and Aniah (2024) titled “Artificial Intelligence level of use among Nigerian university lecturers (AIULNUL). The instrument was grouped in to four; A contained the general level of lecturers’ use of AI tools for teaching and research and Always (A), Often (O), Sometimes (S) & Never (N) were likert-scales used for administering it while B, C, & D contained five items each on the influence of artificial intelligence tools usage for teaching and research on Nigerian university lecturers’ productivity and research and teaching engagements and Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) were likert-scale used in administering it. The instruments were validated by the experts and the reliability co-efficient of 0.84, 0.76, 0.73 and 0.82 were recorded.

Descriptive statistical tools such as mean and standard deviation were used for answering research question 1 where other research questions that have corresponding hypotheses were tested using t-test at 0.05 level of significance.

Data Analysis and Report

Table 1: Table of Stratification

S/N	Sampled States	Universities	Faculty	Department	Lecturers	
Total	(North Central)					
1	Kwara	3	3	2	5	90
2	Kogi	3	3	2	5	90
3	Niger	3	3	2	5	90
Grand Total					270	

The above table displayed how stratification was done for sampling the respondents in the study. It is however, showed that 270 lecturers were conveniently sampled for the study; 90 lecturers from each state from Federal, State and Private Universities available in those sampled states in Nigeria.

Research Question:

What is the general level of artificial intelligence tools usage for teaching and research among university lecturers in Nigeria?

Table 2: *the general level of artificial intelligence tools usage among Nigerian university lecturers*

S/N	lecturers’ level of AI use	Mean	SD	Decision
1.	Intelligent Tutoring System (ITS)	1.47	0.50	Low
2.	Adaptive Learning Platform (ALP)	1.50	0.50	Low
3.	Virtual Reality (VR)	2.60	0.49	Moderate
4.	ChatGPT	3.62	0.48	High
5.	Chatbots	3.30	0.46	High
6.	Virtual Assistance	1.47	0.50	Low
7.	Natural Language Processing	2.53	1.03	Moderate
8.	Intelligent Content Creation Tools	2.45	0.86	Moderate
9.	Data Annalistic and Learning Management System	3.08	0.71	High
10.	Speech Recognition and Language Learning	1.57	0.50	Moderate
Average Mean		2.36		Moderate

0-1.99 is low, 2.0-2.99 is moderate and 3.0-4.0 is high

Table 2 showed that the general level of artificial intelligence usage among university lecturers in North Central Geo-political Zone for teaching and research was moderate with average mean score of 2.36. Similarly, the study revealed that ChatGPT gained high usage from all lecturers with mean score of 3.62. This demonstrated that artificial intelligence tools such as ChatGPT, Chatbots, Data Annalistic and Learning Management System are widely used by virtually all lecturers in the universities in one way or the other.

Hypotheses Testing

H01: there is no significant relationship between artificial intelligence tools usage and Nigerian university lecturers' productivity.

Table 3:

Showing the significance relationship between artificial intelligence tools usage and Nigerian university lecturers' productivity

		AI level of usage	Lecturers'
Productivity			
AI level of usage	Pearson Correlation	1.000	0.396
	Sig. (2-tailed)		0.000
	N	270	270
Lecturers' Productivity	Pearson Correlation	0.396	1.000
	Sig. (2-tailed)	0.000	
	N	270	270

Table 3 showed that calculated co-efficient correlation ($r = 0.396$, $p = 0.000$) which found to indicate significant relationship at 0.05 significant level. Since p-value of 0.000 was less than significance level value of 0.05 therefore null hypothesis one was rejected and therefore there was significant relationship between artificial intelligence tools usage and university lecturers' productivity. This might be as a result of many other rigorous seminars, workshops and conferences that the lecturers have attended.

H02: there is no significant relationship between artificial intelligence tools usage and Nigerian university lecturers' research engagement.

Table 4:

Showing the significant relationship between artificial intelligence tools usage and Nigerian university lecturers' research engagement

		AI level of usage	Lecturers' Research
AI level of usage	Pearson Correlation	1.000	0.075
	Sig. (2-tailed)		0.216
	N	270	270
Lecturers' Productivity	Pearson Correlation	0.075	1.000
	Sig. (2-tailed)	0.216	
	N	270	270

Table 4 showed that calculated co-efficient correlation ($r = 0.075$, $p = 0.216$) which found to indicate no significant relationship at 0.05 significant level. Since p-value of 0.216 was greater than significance level value of 0.05 therefore null hypothesis two was not rejected and therefore there was no significant relationship between artificial intelligence tools

usage and university lecturers' research engagement. This might be as a result of plagiarism checkers dully adopted by many international outlets to check the originality of research works.

H03: there is no significant relationship between artificial intelligence tools usage and Nigerian university lecturers' teaching engagement.

Table 5:

Showing the significant relationship between artificial intelligence tools usage and Nigerian university lecturers' teaching engagement

		AI level of usage	Lecturers' Teaching
AI level of usage	Pearson Correlation	1.000	0.559
	Sig. (2-tailed)		0.000
	N	270	270
Lecturers' Productivity	Pearson Correlation	0.559	1.000
	Sig. (2-tailed)	0.000	
	N	270	270

Table 5 showed that calculated co-efficient correlation ($r = 0.559$, $p = 0.000$) which found to indicate significant relationship at 0.05 significant level. Since p-value of 0.000 was less than significance level value of 0.05 therefore null hypothesis three was rejected and therefore there was significant relationship between artificial intelligence tools usage and university lecturers' teaching engagement. This could be as a result of multiple advantages attached to the persistent use of artificial intelligence tools in teaching.

Discussion of the Findings

Based on the analysis of the findings provided above, the discussion of the findings was presented as follow:

The finding of the study revealed that University lecturers' level of artificial intelligence usage for teaching and research was moderate with average mean of 2.36. The finding was not in line with the finding of Ukeh and Anih (2024) that there was significant low level of artificial intelligence tools usage among lecturers in Federal University Otuoke, Bayelsa State, Nigeria. This might be as a result of scope that is smaller than the present study. Solihu's (2024) study categorized the level of usage based on the faculty and it was discovered in that study that Faculties of Engineering, Medical Sciences and Natural Sciences recorded the higher level of usage.

The finding of the study discovered that there was significant relationship between artificial intelligence level of usage and university lecturers' productivity. The finding of the study was in line with the study of Olatunde-Aiyedun & Hama (2023) that the use of artificial intelligence tools aids lecturers' level of proficiency and productivity.

The finding of the study showed that there was no significant relationship between artificial intelligence level of usage and Nigerian university lecturers' research engagement. The finding of the study disagreed with the conclusion of Ukeh and Anih (2024) that the level of utilization of artificial intelligence tools for research aids lecturers' research engagement and proficiency in Federal University Otuoke, Bayelsa State, Nigeria.

The finding of the study also showed that there was significant relationship between artificial intelligence level of usage and university lecturers' teaching engagement. The finding of the study agreed with the study of Diala et al. (2024) that there was significant

relationship between lecturers' utilization of artificial intelligence platforms and teaching of English Language and library practices.

Findings

The findings of the study revealed that:

1. University lecturers' level of artificial intelligence usage for teaching and research was moderate with average mean of 2.36.
2. there was significant relationship between artificial intelligence level of usage and Nigerian university lecturers' productivity.
3. there was no significant relationship between artificial intelligence level of usage and Nigerian university lecturers' research engagement.
4. there was significant relationship between artificial intelligence level of usage and Nigerian university lecturers' teaching engagement.

Conclusion

It was concluded in the study that University lecturers' level of use of artificial intelligence enhance their productivity and proficiency in teaching and research.

Recommendation

The following recommendations are raised in the study based on the analyses:

1. University lecturers should be encouraged to be conversant with the use of artificial intelligence tools for teaching and research.
2. They should develop their productivity through the use of artificial intelligence tools.
3. University managements should organize series of workshops and seminars on the proper ways of using artificial intelligence tools for teaching.
4. They should be trained how to use artificial intelligence tools for research in order to make the work easier and faster.

References

- Afiya, J. (2023). The roles of artificial intelligence (AI) in teacher education: opportunities and challenges. *International Journal of Research and Analytical Reviews*, 10 (1), 139-146. www.ijrar.org
- Baigi, F. M., Masoumeh, S., Ghaddaripouri, K., Ghaddaripouri, M., Mousari, A. F. & Khalil, K. (2023). Attitudes, knowledge and skills towards artificial intelligence among healthcare students: A systematic review. *National Institutes of Health*, 6 (3), e1138. Doi:10.1002/hsr2.1138
- Diala, E. L., Fiat, M. U., Uchenna, C. N. & Ohanaka, B.U. (2024). Impact of artificial intelligence (AI) on lecturers' proficiency levels in English Language and Library Practices in Nigerian Universities. *International Journal of Research and Innovation in Social Sciences*, 8 (3), 2217-2235. Doi: <https://dx.doi.org/10.47772/IJRISS.2024.803161S>.
- Eiriemiokhale, K. A., & Sulyman, A. S. (2023). Awareness and perceptions of artificial intelligence among librarians in university libraries in Kwara State, Nigeria. *Indonesian Journal of Librarianship*, 4 (2), 107-118. <https://doi.org/10.33701/ijolib.v4i2.3364>

- Gaber, S. A., Shahat, H. A., Alkhateeb, I. A., Al Hasan, S. A., Alqatam, M. A., Almughyrah, S. M., & Kamel, M. k. (2023). Faculty members' awareness of artificial intelligence and its relationship to technology acceptance and digital competencies at King Faisal University. *International Journal of Learning, Teaching and Educational Research*, 22(7), 473-496. <https://ijlter.org/index.php/ijlter/article/view/7916/pdf>.
- Jatileni, C. N., Sanusi, I. T., Olaleye, S A., Musa, A. A., Friday, J. A. & Peter, B. O.(2023). Artificial intelligence in compulsory level of education: perspectives from Namibian in-service teachers. *Education and Information Technologies*, Doi: <https://doi.org/10.1007/s0639-023-12341-z>
- Madu, C. O. & Musa, A. (2024). Lecturers' level of awareness of artificial intelligence as correlate to their digital competence at Federal University Wukari, Nigeria. *Journal of Educational research in Developing Areas*, 5 (1), 59-67. Doi: <https://doi.org/10.47434/JEREDA.5.1.2024.59>
- Ofem, U. J., Iyam, M. A., Ovat, S. V., Nworgwugwu, E. C., Anake, P. M., Udeh, M I. & Out, B. D. (2024). Artificial intelligence in academic research. A multi-group analysis of students' awareness and perception using gender and programme type. *Journal of Allied Learning and Teaching*, 7 (1), 76-92. <http://journals.sfu.ca/jalt/index.php/jalt/index>
- Olatunde-Aiyedun, T. G. (2024). Artificial intelligence in education: Integration of AI into Science Education curriculum in Nigerian universities. *International Journal of Artificial Intelligence for Digital*, 1 (1), 1-14. <https://economic.silkroad-science.com/index.php/IJAIFD>
- Olatunde-Aiyedun, T. G. & Hamma, H. (2023). Impact of artificial intelligence (AI) on lecturers' proficiency levels in MS PowerPoint, Canva and Gamma in Nigeria. *Journal of Humanity and Artificial Intelligence*, 2 (8), 1-16.
- Rasul, T., Nair, S., Kalendra, D., Robin, M., Santini, F. O., Ladeira, W.J., Sun, M.W., Day, I., Rather, A.R., & Heathcote, L. (2023). The role of ChatGPT in higher education: Benefits, challenges, and future research directions. *Journal of Applied Learning & Teaching*, 6(1), 41-56. <https://doi.org/10.37074/jalt.2023.6.1.29>
- Russell, S. & Norvig, P. (2010). *Artificial Intelligence: A Modern Approach*. Prentice Hall.
- Silvia, P. (2023). Pre-service teachers' attitudes towards artificial intelligence and its integration into EFL teaching and learning. *Journal of Language and Cultural Education*, 11 (3), 100-114. Doi: 10.2478/jolace-2023-0031
- Solihu, A. H. (2024). *AI for the Humanities: Harnessing or Reviewing Native Intelligence?*. A paper presented at a day online Zoom workshop organized by Ilorin Emirate Professors' Association on Sunday 6th October, 2024 from 9am-1pm. Theme of the workshop: Artificial Intelligence and the future of Academia.
- Thomas, G. & Gambari, A.I. (2021). *A review of artificial intelligent for teaching, assessment and research in Nigerian Universities*. Conference: Association for Innovative Technology Integration in Education (AITIE, 2021) Conference Proceedings, 199-207
- Ukeh, B. O. & Anih, A. A. (2024). Utilization of artificial intelligence based tools for teaching and research among lecturers in Federal University Otuoke Bayelsa State, Nigeria. *Sapientia Foundation Journal of Education, Sciences and Gender Studies*, 6 (1), 153-159. Online ISSN: 2734-2514