



Assessing the Knowledge and Perception of Artificial Intelligence for Teaching and Research among Lecturers in the Faculties of Arts in Nigeria

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Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

This study assesses the knowledge of artificial intelligence (AI) for teaching and research among lecturers in the faculties of arts in Nigeria. Despite the growing recognition of AI's potential to enhance educational practices, there are significant gaps in educators' AI literacy. The research adopts a quantitative approach, surveying lecturers across Nigerian universities to gauge their awareness, engagement, and perceptions of AI integration. Results reveal a moderate level of AI awareness among respondents, with a notable interest in further training tailored to arts disciplines. Challenges such as technical barriers and limited resources hinder seamless AI integration, highlighting the need for targeted interventions and support mechanisms. Recommendations include enhanced training programs, infrastructure improvement, and ethical guidelines to facilitate

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responsible AI utilization in arts education. Addressing these challenges and fostering AI literacy among educators can create an enabling environment for leveraging AI to enhance teaching and research outcomes in Nigerian arts faculties.

Keywords: Artificial intelligence; faculty of Arts; lecturers; knowledge and awareness; teaching and research; Nigerian universities.

1. INTRODUCTION

Artificial intelligence (AI) stands at the forefront of technological innovation, permeating various aspects of contemporary society including education [1,2,3]. The use and acceptability of AI are rapidly increasing around the world (Borenstein and Howard 2021). AI can be defined as the simulation of the human mind to make computers think and act like humans by performing tasks like learning and problem-solving [4]. There have been lots of arguments around the development of artificial intelligence as having more potential to change higher education than any other technological advancement (Bates, 2018; Akinwalere & Ivanov, 2022). As a fundamental component of societal evolution and individual development, education has had significant benefits from AI breakthroughs and the integration of AI in educational systems is altering how students learn, teachers educate, and institutions function (Kimalov, et al., 2023). While Zuboff [5] identifies four key applications of AI in teaching and learning: profiling and prediction; intelligent tutoring systems; assessment and evaluation; adaptive systems and personalization, some researchers however noted that little has been accomplished in terms of its direct impact on education (Akinwalere & Ivanov, 2022).

As AI continues to redefine the landscape of teaching, learning, and research, assessing educators' proficiency and awareness of AI concepts becomes paramount. This research endeavours to explore and evaluate the knowledge of artificial intelligence for teaching and research among lecturers within the faculties of arts in Nigeria. As a populous African nation, Nigeria grapples with the imperative to embrace emerging technologies to enhance its educational system [6,7,8,9]. Within the context of faculties of arts, encompassing disciplines such as literature, linguistics, history, philosophy, fine arts, etc., understanding the extent of AI literacy among educators is essential for fostering innovation and preparing students for the demands of the digital age. As AI technologies proliferate, educators are

confronted with the task of navigating the complex intersection of pedagogy and technology to harness AI's full potential in enhancing teaching and research practices. Also, Research underscores the importance of AI literacy among educators in effectively leveraging AI tools for teaching and research purposes [10]. Studies by Holmes et al. [11] emphasize the role of educator preparedness in harnessing AI's transformative potential, highlighting the need for targeted training programs and professional development initiatives to enhance AI proficiency among faculty members.

While AI holds promise for optimizing teaching and research practices, its integration into faculties of arts presents unique challenges and opportunities. Limited awareness and understanding of AI concepts among arts educators, coupled with institutional barriers to technological adoption, hinder the seamless integration of AI into arts education ((Akinwalere & Ivanov, 2022). However, initiatives aimed at fostering interdisciplinary collaboration and promoting AI literacy among arts faculty offer promising avenues for overcoming these challenges [9,12]. Within the Nigerian higher education landscape, efforts to integrate AI into arts education are nascent but burgeoning. With the government's push for technological innovation and digital literacy, there is a growing recognition of the need to equip educators with the requisite AI knowledge and skills to meet the demands of the 21st-century workforce [13].

Against this backdrop, this research aims to assess the knowledge of artificial intelligence for teaching and research among lecturers in the faculties of arts in Nigeria. By evaluating educators' AI literacy, perceptions, and attitudes towards AI integration, this study seeks to inform targeted interventions and policy recommendations aimed at fostering a culture of innovation and technological fluency within Nigerian arts education.

2. LITERATURE REVIEW

AI's potential to revolutionize teaching methodologies, streamline administrative

processes, and enhance learning outcomes has garnered significant attention. However, while AI adoption in technical disciplines is well-documented [14,15], its integration into non-technical domains, such as the humanities, remains a relatively underexplored terrain [16]. This review synthesizes existing research to examine the landscape of AI knowledge among lecturers in faculties of arts within Nigerian universities.

The infusion of AI technologies into higher education institutions has sparked discussions on its potential to optimize administrative operations, personalize learning experiences, and augment teaching practices. Research by Zuboff [5], Akinwalere & Ivanov (2022) highlights the multifaceted applications of AI, ranging from adaptive learning systems to intelligent tutoring platforms, and underscores the need for educators to acquire AI literacy to effectively leverage these tools. Studies investigating educators' readiness and proficiency in AI reveal a spectrum of awareness and competence. While some educators exhibit a keen interest in integrating AI into their pedagogical approaches [11], others express apprehensions stemming from perceived complexities and ethical concerns [14]. Notably, research by Ferrein, & Meyer (2012), Ade-Ibijola &, Okonkwo [17] emphasizes the importance of fostering AI literacy among educators to navigate the ethical, social, and pedagogical implications of AI integration in education. The literature underscores several challenges impeding the widespread adoption of AI in non-technical disciplines, particularly within faculties of arts. These challenges include a lack of awareness and understanding of AI concepts among educators, limited institutional support and resources for AI education initiatives [18], and cultural and institutional resistance to technological innovations (Cramer et al., 2019).

While global discourse on AI in education predominates, regional perspectives offer valuable insights into context-specific challenges and opportunities. Research on AI adoption in African higher education institutions, including Nigerian universities, is limited but emerging. Notably, studies by Akinwalere & Ivanov, 2022; Cleopas, 2023; Thomas & Gambari (2021), and Nsoh et al. [19] shed light on the nascent efforts to integrate AI into Nigerian higher education, highlighting the need for localized strategies to enhance AI literacy among educators. Efforts to bridge the AI literacy gap among educators necessitate comprehensive strategies encompassing curriculum development,

professional development initiatives, and institutional support structures. Ezekiel & Akinyemi [20] advocates for an interdisciplinary approach to AI education, emphasizing the importance of integrating AI concepts into diverse academic disciplines, including the humanities. Furthermore, initiatives such as AI training workshops, collaborative research projects, and mentorship programs have shown promise in fostering AI literacy among educators (Thomas & Gambari (2021). Moving forward, concerted efforts are needed to address the barriers to AI literacy among educators and foster a culture of innovation and collaboration conducive to AI integration in arts education within the Nigerian higher education landscape [21].

3. METHODOLOGY

This study adopts a quantitative research design (from October 2023 to January 2024) to comprehensively assess the knowledge of artificial intelligence (AI) among lecturers in faculties of arts in Nigeria. The approach allows for triangulation of data from quantitative surveys, providing a holistic understanding of AI literacy among educators.

Sampling Strategy: The target population comprises lecturers within faculties of arts in Nigerian universities. A simple random sampling technique was employed to ensure representation across geopolitical zones in Nigeria. A federal and a state university with the highest number of respondents was selected to represent each geopolitical zone.

Data Collection Instruments: a. Quantitative Survey: A structured questionnaire was developed to assess lecturers' knowledge, attitudes, and perceptions regarding AI for teaching and research. The survey included items measuring AI literacy, familiarity with AI applications in education, perceived barriers to AI integration, and preferences for AI training and professional development.

Data Collection Procedure: The survey was administered electronically using online survey platforms to facilitate widespread participation and ensure data confidentiality. Participants were contacted via faculty of arts lecturers' WhatsApp groups and invited to complete the questionnaire within a specified timeframe.

Data Analysis: Survey data was analyzed using descriptive statistics to summarize participants' responses and assess the level of AI knowledge among lecturers.

Table 1. Sampled respondents from Lecturers in Arts Faculties across the Universities in Nigeria

Geopolitical Zones	Universities	Total number of Lecturers in Arts faculties	Percentage
North-Central	Kwara State University	23	15%
	Federal University, Nasarawa	12	8%
North-East	University of Maiduguri	9	6%
	Bauchi State University	11	7%
North-West	Ahmadu Bello University	13	8%
	Usman Danfodiyo University	12	8%
South-East	Abia State University	14	9%
	University of Nigeria	12	8%
South-South	University of Port Harcourt	12	8%
	Delta State University	8	5%
South-West	University of Ibadan	15	10%
	Lagos State University	14	9%
Total		155	100%

Source: Field survey, 2024

4. RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of Respondents

Result presented in Table 2 indicated that 67.7% of the lecturers were male while 32.3% were female. This indicates that the population of male lecturers in the faculties of Arts in Nigerian universities is higher than that of the female. The modal average of the lecturers was 51-60 years, this shows that the lecturers were no longer youth who are expected to be curious about AI's issues. Most of the respondents (48.4%) were from department of foreign languages. 64.6% of the respondents have more than 11 years teaching and research experience in the universities. 38.7% were in the rank of senior lecturers. The ratio of the rank of lecturer II and professor is equal as 12.9% are in the rank of Lecturer II while another 12.9% are in the rank of professor.

4.2 Lecturers' Knowledge of Artificial Intelligence

Regarding the overall awareness of AI among respondents, the majority reported having a moderate level of awareness (48.4%), followed by low awareness (29%) and high awareness (12.9%). Notably, only a small percentage reported very low (6.5%) or very high (3.2%) levels of awareness. This distribution suggests that while a significant portion of lecturers have some level of familiarity with AI, there is still room for improvement, particularly in enhancing awareness among those with lower levels of

familiarity. It is also observed that less than half of the respondents (48.4%) reported attending workshops or training sessions related to AI. This indicates that there is a considerable portion of lecturers who have not received formal training or exposure to AI concepts and technologies. This finding underscores the importance of providing opportunities for professional development in AI to support educators in integrating these advancements into their teaching and research practices.

The survey showed that a relatively smaller proportion of lecturers (29%) reported integrating AI into their teaching activities. Examples of AI used for teaching according to the respondents are DeepL for training of machine translation, Google Meet, zoom, WhatsApp AI bot to explain interconnected and compact nature of the world to students in global music business classes, ChatGPT for developing course outline, digital camera, and special effects technology for film production projects. Similarly, a comparable percentage of respondents (29%) reported conducting research projects or studies with the assistance of AI.

When the respondents were asked to briefly describe their AI-assisted research experience, few of them responded as follows: *The AI was employed to generate an abstract for a paper I was preparing, and I reworked the abstract to suit my needs. However, I observed that AI saved me time in generating the first draft of the abstract; In explaining key concepts and analyzing data; I used AI to generate research topics and write abstracts; I used Grammarly app*

to check issues in grammar, tenses, and concord. These findings suggest that while there is some level of engagement with AI among lecturers in faculties of Arts in Nigerian universities, there is still a significant portion who have not yet fully embraced these technologies in their academic pursuits. The survey results indicate a notable interest among lecturers in further training or workshops specifically tailored for faculty of Arts disciplines, with 87.1% expressing interest in such opportunities. This underscores a growing recognition among educators of the relevance and potential benefits of AI in the humanities and social sciences domains.

The findings suggest a mixed landscape of awareness and engagement with AI among lecturers in the arts disciplines. While there is moderate awareness of AI concepts, there is a need for increased training and support to facilitate the integration of AI technologies into teaching and research activities. Additionally, there is a strong interest among educators in further professional development opportunities tailored to their disciplinary needs, highlighting

the potential for continued growth and innovation in this area.

The findings in Table 4 above shed light on the challenges and opportunities associated with integrating AI into teaching and research within the Faculty of Arts. Addressing these challenges and providing the necessary support and resources can facilitate the effective utilization of AI to enhance teaching and research outcomes in the Faculty of Arts. However, it is essential to balance enthusiasm for AI with caution, address concerns about potential laziness, and prioritize faculty support to ensure successful AI integration. Additional comments from the respondents are on balancing caution and enthusiasm; some acknowledge the potential of AI while also cautioning against overreliance and emphasizing the need for verification and critical thinking. There were also concerns about laziness; there is a recurring concern about the potential for AI to make students and lecturers lazy if not effectively managed. Many suggestions were made for further training and support for faculty members to effectively utilize AI in teaching and research.

Table 2. Socio-economic characteristics of respondents

Variables	Frequency	Percentage
Sex		
Male	105	67.7
Female	50	32.3
Age (years)		
31-40	30	19.4
41-50	45	29
51-60	50	32.2
61 and above	30	19.4
Departments		
English	25	16.1
Foreign Languages	75	48.4
History	10	6.5
Linguistics	15	9.7
Religion	5	3.2
Performing Arts	25	16.1
Years of Teaching and research experience		
1-5	20	12.9
6-10	35	22.6
11-15	50	32.3
16 and above	50	32.3
Academic Rank		
Assistant lecturer	15	9.7
Lecturer II	20	12.9
Lecturer I	25	16.1
Senior Lecturer	60	38.7
Associate Professor	15	9.7
Professor	20	12.9

Source: Field Survey, 2024

Table 3. Knowledge about Artificial Intelligence among respondents

	Frequency	Percentage
How would you rate your overall awareness of Artificial intelligence?		
Very low	10	6.5
low	45	29
moderate	75	48.4
High	20	12.9
Very high	5	3.2
Have you attended any workshop or training sessions related to Artificial Intelligence?		
Yes	23	48.4
No	146	51.6
Have you incorporated any AI or technologies into your teaching curriculum?		
Yes	45	29
No	110	71
Have you conducted any research projects or studies with the assistance of Artificial Intelligence?		
Yes	45	29
No	110	71
Are you interested in further training or workshops in AI specifically tailored for faculty of Arts disciplines?		
Yes	95	39.3
No	135	87.1
Maybe	5	3.2
	15	9.7

Source: Field survey, 2024

Table 4. Challenges and Opportunities in Integrating AI in Teaching and Research

Challenges	Opportunities
1. Monotony: Respondents expressed concerns about AI potentially leading to monotony in teaching or research, suggesting a need for innovative approaches to maintain engagement and creativity.	1. Training and Workshops: There was an ardent desire for more frequent seminars, workshops, and training sessions on AI to enhance faculty members' knowledge and skills
2. Accuracy without Human Verification: Some respondents highlighted the perception that AI can achieve 100% accuracy without human verification, raising concerns about trust and oversight in academic work.	2. Infrastructure: Adequate supply of gadgets, internet facilities, and constant power supply were deemed essential for integrating AI effectively into teaching and research.
3. Technical Challenges: Issues such as inadequate knowledge of gadgets, interrupted network and power outages, and lack of comprehensive knowledge about AI hindered the smooth integration of AI into teaching and research.	3. Financial Support: Access to research funding, grants, and latest tech gadgets were mentioned as helpful resources to support AI integration efforts
4. Specialized Challenges: In fields like literary translation, respondents identified challenges related to the connotation of words, highlighting the need for AI systems to understand context and nuance.	4. Specific Training Needs: Respondents expressed interest in learning about a variety of AI topics and skills, including interaction with AI, avoiding plagiarism, data analysis, and machine translation, underscoring the importance of tailored training programs.
5. Fear of Plagiarism: There was a fear among respondents that AI might lead to	

Challenges	Opportunities
plagiarism if not used correctly, underscoring the importance of ethical considerations in AI utilization.	
6. Student Behavior: Concerns were raised about potential abuse by students in the teaching context, emphasizing the importance of maintaining academic integrity and monitoring student activities.	
7. Limited Resources and Training: Many respondents expressed a lack of adequate training, resources, and knowledge about AI, including ICT knowledge, indicating a need for comprehensive training programs and support mechanisms.	
8. Lack of Creativity and Cultural Nuances: Respondents noted AI's limitations in aesthetics, creativity, and understanding of cultural nuances, suggesting the need for human intervention to address these gaps.	

Source: Field survey, 2024

5. CONCLUSION

The integration of artificial intelligence (AI) into teaching and research within the faculties of arts presents both challenges and opportunities for educators in Nigeria. While there is a growing awareness of AI's potential to enhance educational practices, there are significant gaps in educators' knowledge and skills related to AI concepts and applications. This study highlights the need for targeted interventions and support mechanisms to foster AI literacy among arts faculty members and facilitate the effective utilization of AI technologies in teaching and research activities.

Efforts to address the challenges identified in this study, such as technical barriers, specialized challenges, and limited resources, require collaborative initiatives involving academic institutions, policymakers, and relevant stakeholders. By investing in infrastructure, providing financial support, and offering specialized training programs, Nigerian universities can create an enabling environment for educators to leverage AI effectively in arts education.

Additionally, the findings underscore the importance of ethical considerations, academic integrity measures, and ongoing professional development to ensure responsible AI integration and mitigate potential challenges such as plagiarism and student misuse. By balancing enthusiasm for AI with caution and prioritizing

faculty support, Nigerian universities can harness the transformative potential of AI to enhance teaching and research outcomes within the faculties of arts, ultimately contributing to the advancement of arts education in the digital age.

6. RECOMMENDATIONS

Based on the findings of this paper, the researcher recommends the following:

AI policy: An AI policy for faculties of lecturers plays a crucial role in promoting ethical, responsible, and inclusive AI integration in teaching and research practices. By establishing guidelines, providing training, and fostering collaboration, such a policy can support faculty members in harnessing the potential of AI to enhance learning outcomes and advance arts education in the digital age.

Enhanced Training Programs: Implement regular seminars, workshops, and training sessions specifically tailored to the faculties of arts to improve educators' knowledge and skills in AI. These programs should cover a wide range of AI topics, including interaction with AI, plagiarism detection, data analysis, and machine translation.

Infrastructure Improvement: Invest in improving infrastructure such as providing a consistent power supply, internet connectivity, and access to necessary technological tools and gadgets. This will facilitate the effective

integration of AI into teaching and research activities.

Financial Support: Allocate research funding and grants to support AI integration efforts within faculties of arts. This financial support can be utilized for acquiring AI tools, conducting research projects, and organizing training programs.

Specialized Training: Develop specialized training programs to address the unique challenges faced by educators in fields like literary translation. These programs should focus on enhancing AI systems' understanding of context and nuance to improve their applicability in arts disciplines.

Ethical Guidelines: Establish clear ethical guidelines for the use of AI in teaching and research to mitigate concerns about plagiarism and ensure responsible AI utilization. Educators should be educated on these guidelines and encouraged to uphold ethical standards in their AI-assisted activities.

Academic Integrity Measures: Implement measures to uphold academic integrity and prevent student abuse of AI technologies in the teaching context. This may include monitoring student activities and fostering a culture of honesty and integrity within academic institutions.

Comprehensive Training Programs: Develop comprehensive training programs to address the lack of awareness, resources, and knowledge about AI among educators. These programs should encompass ICT knowledge and provide ongoing support for faculty members to stay updated on AI advancements.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Bostrom N. *Superintelligence: Paths, dangers, strategies*. Oxford University Press, Cop; 2017.
2. Abayomi OK, Adenekan FN, Abayomi AO, Ajayi TA, Aderonke AO. Awareness and perception of artificial intelligence in the management of university libraries in Nigeria. *Journal of Interlibrary Loan, Document Delivery and Electronic Reserve*. 2021;29(1-2):13-28.
3. Sanusi IT, Olaleye SA, Agbo FJ, Chiu TK. The role of learners competencies in artificial intelligence education. *Computers and Education: Artificial Intelligence*. 2022;3:100098. DOI: <https://doi.org/10.1016/j.caeai.2022.100098>
4. Zhang C, Lu Y. Study on artificial intelligence: The state of the art and prospects. *Journal of Industrial Information Integration*. 2021;23:100224.
5. Zuboff S. *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. Public Affairs; 2019.
6. Liverpool LSO, Marut MJ, Ndam JN, Oti DA. Towards a model for learning in Nigerian HEIs: Lessons from the University of Jos ICT Maths initiative. *Proceedings of the ICT Obafemi Awolowo University Ile-Ife*; 2009.
7. Robinson RN. Artificial intelligence: ITSS importance, challenges and applications in Nigeria. *Direct Resources Journal Engineering Information Technology*. 2018;5(5):36-41.
8. Adejo AA, Misau AY. Application of artificial intelligence in academic libraries in Nigeria; 2021.
9. Enang CE. Emerging technologies in teaching and learning of business education programmes in the new normal in tertiary institutions in Nigeria. *Nigerian Journal of Business Education (Nigjbed)*. 2022;9(2):64-71.
10. Reiss MJ. The use of AI in education: Practicalities and ethical considerations. *London Review of Education*. 2021;19(1)5:1–14. Available:<https://doi.org/10.14324/LRE.19.1.05>
11. Holmes W, Persson J, Chounta I, Wasson B, Dimitrova V. Artificial intelligence and education: A critical view through the lens of human rights, democracy, and the rule of law. Council of Europe Publishing, F-67075 Strasbourg Cedex; 2022. Available:<http://book.coe.int>
12. Bali B. Analysis of emerging trends in artificial intelligence in education in Nigeria; 2024. DOI:<https://doi.org/10.21203/rs.3.rs-3819828/v1> accessed on 2 March 2024

13. Mohammed K, Shehu A. A review of artificial intelligence (AI) challenges and prospects of explainable ai in major fields: A case study of Nigeria. *Open Journals Nigeria (OJN)*. 2023;4(1):01- 18.
DOI: <https://10.52417/ojps.v4i1.458>
14. Pedro F, Subosa M, Rivas A, Valverde P. Artificial intelligence in education: Challenges and opportunities for sustainable development; 2019.
Available:<https://repositorio.minedu.gob.pe/bitstream/handle/20.500.12799/6533/Artificial%20intelligence%20in%20education%20challenges%20and%20opportunities%20or%20sustainable%20development.pdf>
15. Ayanwale MA. Can experience determine the adoption of industrial revolution 4.0 skills in 21st-century mathematics education? *Research in Social Sciences and Technology*. 2023;8(1):74-91.
Available:<https://doi.org/10.46303/ressat.2023.6>
16. Li J, Zhang B. The application of artificial intelligence technology in art teaching taking architectural painting as an example. *Comput Intell Neurosci*; 2022.
DOI: 10.1155/2022/8803957
PMID: 35619771;
PMCID: PMC9129932.
17. Ade-Ibijola A, Okonkwo C. Artificial intelligence in Africa: Emerging challenges. In: Eke DO, Wakunuma K, Akintoye S. (Eds) *responsible AI in Africa. Social and Cultural Studies of Robots and AI*. Palgrave Macmillan, Cham; 2023.
Available:https://doi.org/10.1007/978-3-031-08215-3_5
18. Kamalov F, Santandreu Calonge D, Gurrib I. New Era of artificial intelligence in education: Towards a sustainable multifaceted revolution. *Sustainability*. 2023;15:12451.
Available:<https://doi.org/10.3390/su151612451>
19. Nsoh AM, Joseph T, Adablanu S. Artificial intelligence in education: Trends, opportunities and pitfalls for institutes of higher education in Ghana. *International Journal of Computer Science and Mobile Computing*. 2023;12(2):38-69.
20. Ezekiel OB, Akinyemi AL. Utilization of artificial intelligence in education: The perception of university of ibadan lecturers. *Journal of Global Research in Education and Social Science (JOGRESS)*. 2022;16(5):32-40.
DOI:<https://10.56557/jogress/2022/v16i58053>
21. Cleopas BC. Advent of artificial intelligence: Prospects and challenges in Nigeria education system.GPH-*International Journal of Educational Research*. 2023;6(06):01-09.
Available:<https://doi.org/10.5281/zenodo.8114160>

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