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ASSESSMENT OF LECTURERS' USE OF ARTIFICIAL INTELLIGENCE FOR TEACHING AND LEARNING IN ADEYEMI FEDERAL UNIVERSITY OF EDUCATION ONDO, ONDO STATE, NIGERIA

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Abstract
This study investigated the assessment of lecturers' use of Artificial Intelligence (AI) for teaching and learning in Adeyemi Federal University of Education Ondo, Ondo State, Nigeria. The descriptive survey research design was adopted for the study. The study was guided by two research questions and one research hypothesis. The population of the study consisted of all lecturers in Adeyemi Federal University of Education Ondo, Ondo State, Nigeria. The sample population for the study consisted of four hundred and fifty (450) lecturers randomly selected from the present five faculties in the institution. Ninety (90) lecturers were randomly selected from each of the faculties, making a total number of 450 participants. The instrument used in the study was a self-developed questionnaire titled Assessment of Lecturers' Use of Artificial Intelligence for Teaching and Learning Questionnaire (ALUAITLQ). The instrument was validated by two experts in test and measurement from the department of Educational Foundation and Counseling, Ekiti State University, Ado Ekiti. The reliability coefficient of the instrument was also determined with the use of cronbach Alpha method which yielded the value of 0.83. This was considered high enough for the instrument to be used in the study. Data collected were analyzed with the use of both descriptive and inferential statistical tools. Mean and standard deviation were used to answer the research questions while the t- test was used to test the research hypothesis. The findings of the study revealed that: lecturers' level of AI for teaching and learning in Adeyemi Federal University of Education Ondo was very low. The findings also show that the perceived ease of use of AI by lecturers was very high. It also revealed in the study that gender has no significant effect on lecturers' use of AI for teaching and learning. It was recommended among others that the use of Artificial Intelligence should be encouraged among lecturers. University managements should organize training for lecturers on how to make use of AI in teaching and learning process. The study also recommends that University

should further encourage both male and female lectures to continue using AI for teaching and learning.

Keywords: Artificial Intelligence, teaching and learning, Ondo State, lecturers

Introduction

The integration of artificial intelligence (AI) in education, especially in teaching and learning process are becoming more common and have drawn a lot of attention in recent years. Artificial intelligence (AI) tools and technologies are being inculcated into teaching and learning procedures to provide new opportunities with the aim of improving quality education. Artificial Intelligence according to Jones & Brown (2021) is a multidisciplinary science with numerous approaches that operates based on the combination of enormous amounts of digital data and intelligent algorithms that let machines "learn" automatically by having the capacity to read and understand guidelines and data so that they analyse and act following logical reasoning and behave in a way that is comparable to humans. Also, Kadaruddin, (2023) defines AI as the intelligence of a machine or computer that enables it to imitate or mimic human capabilities. AI systems are designed to see and understand the world through various input modes, such as text, images, video, and audio (Borenstein & Howard 2021). This involves techniques like computer vision, natural language processing, and speech recognition, which enable machines to interpret and process sensory data. Artificial Intelligence (AI) is expected to help humans learn better and achieve educational goals more effectively. So, it is not surprising that currently many AI-based innovations and breakthroughs are being and will be applied to support the learning process to make it more practical and effective. It is therefore, expected of a teacher to take advantage of AI in terms of completing school administration such as making lesson plans, student attendance lists, reporting student learning outcomes, making learning media and learning resources.

There are various AI tools that can be effectively integrated into teaching and learning process to improve the quality of education. For instance, Chat PDF is particularly useful in helping students get better insights and understanding into educative documents that may be in PDF format. Socrative and Quillionz are AI powered tools used to quickly and easily create quiz questions and assessment by teachers. With the use of Turnitin plagiarism check, teachers can check for originality of their students' work (Baker & Hawn, 2022). However, lecturers are at the forefront of introducing cutting-edge teaching techniques in universities to involve students and enhance learning outcomes (Abidoye 2023). The way lecturers carry out their assignments could be completely transformed by the incorporation of AI tools, such as automated grading, intelligent tutoring systems,

and individualized learning. In this global era of technological growth and the gradual introduction to tertiary institutions, it becomes necessary for the lecturers to be proficient in using categories of these technologies towards improving their effectiveness in terms of teaching and learning process.

Gender is one of the important factors that affect the use of technology in teaching and learning. Understanding the gender dynamics in AI utilization among lecturers in Ondo State's tertiary institutions is crucial for addressing disparities and promoting inclusivity in the adoption of AI-driven educational technologies. Gender plays a significant role in shaping lecturers' attitudes, perceptions, and behaviors towards AI, reflecting broader societal norms, expectations, and disparities (Cleopas 2023)). Researchers such as Aderele & Abidoye (2022) suggests that gender stereotypes and biases may contribute to disparities in Science, Technology, Engineering, and Mathematics (STEM) fields, potentially influencing female lecturers' access to and use of AI-driven educational resources. Gendered expectations and societal norms regarding academic interests and career aspirations may impact female lectures' confidence and willingness to engage with AI for instructions. Despite the relevance of AI tools in education especially in teaching and learning process, studies have revealed that majority of these tools appear not to be in use in the Nigerian educational sector particularly university system of education. This is due to some of the challenges surrounding the effective use of the technologies in tertiary institutions in most underdeveloped nations like Nigeria. Such challenges include poor internet connectivity, high cost of ICT infrastructures, inadequate power supply and poor funding.

Adeyemi Federal University of Education Ondo is one of the teacher training universities recently created by the federal government of Nigeria located in Ondo State in the southwestern part of Nigeria. It was formally a college of education for years but recently upgraded to university status. The level of use of AI by lecturers for teaching and learning process is not ascertained in the institution. Hence, there is need to investigate the assessment of lecturers' use of AI in the institution which is the focus of this paper.

Statement of Problem

The use of artificial intelligence in tertiary institutions globally has been one of the key factors in ensuring effective teaching and learning. With the integration of artificial intelligence in different sectors, universities are inclusive. However, one would expect to see a holistic and integrated application and utilization of technologies and other platforms of e-learning, of which artificial intelligence is an exemplary part, in the provision and utilization of effective teaching and learning in universities. It has been observed that there has been relatively poor utilization

of artificial intelligence tools for teaching and learning, especially among lecturers in Adeyemi Federal University of Education (AFUED) Ondo, Ondo State. Therefore, this study investigates the assessment of lecturers' use of artificial intelligence for teaching and learning process in Adeyemi Federal University of Education Ondo Ondo state, Nigeria.

Objectives of the study

The study aims at achieving the following objectives:

1. To examine lecturers' level of use of artificial intelligence in teaching and learning process in Adeyemi Federal University of Education Ondo, Ondo State.
2. To assess the easy use of artificial intelligence for teaching and learning process by the lecturers in Adeyemi Federal University of Education Ondo, Ondo State.
3. Examine the influence of gender on lecturers' use of AI for teaching and learning in Adeyemi Federal University of Education Ondo, Ondo State.

Research Questions

The following research questions were raised and answered in this study.

1. What is the lecturers' level of use of AI tools for teaching and learning process in Adeyemi Federal University of Education Ondo?
2. What are the lecturers perceived ease of use of AI tools for teaching and learning in Adeymi Federal University of Education Ondo?

Research Hypothesis

Ho1: There is no significant difference between male and female lecturers' use of Artificial

Intelligence for teaching and learning in Adeyemi Federal University of Education, Ondo.

Methodology

The study adopted a descriptive survey of research design. The sample population consisted of 450 lecturers randomly selected from five faculties in the university. 90 lecturers were randomly selected in each of the faculties, making a total of 450 participants. The instrument for this study was the researcher's self-developed questionnaire titled Assessment of Lecturers' Use of Artificial Intelligence for teaching and Learning Questionnaire (ALUAITAQ). The instrument was divided into four sections A-D. Section A focuses on demographic information covering the participants' gender, school and location. Section B consisted of ten question items eliciting information on lecturers' level of use of artificial intelligence for teaching and learning. Section C focuses on the lecturers' perceived ease of use of artificial intelligence for teaching and learning. While section D consisted of 10 question items sought information on the challenges of using artificial intelligence for teaching and learning. 4-point Likert Scale response modes: Strongly Agree (SA = 4), Agree (A = 3), Disagree (D = 2) and Strongly Disagree (SD = 1) were used.

Face and content validation of the instrument was carried out by an expert in test measurement and evaluation from the Department of Educational Foundation and Counselling Ekiti State University, Ado Ekiti. To ensure that the instrument has the accuracy, appropriateness and completeness for the study. Cronbach Alpha technique was used to determine the level of reliability of the instrument. The reliability coefficient of 0.83 was obtained and this was high enough to justify the use of the instrument. Data generated for this study was analysed with the use of both descriptive and inferential statistical tools. Mean and standard deviation were used to answer the research questions raised in the study. While t-test was used to test the only one research hypothesis in the study.

Results

Research Question1: What is the lecturers' level of use of AI tools for teaching and learning in Adeyemi Federal University of Education Ondo?

Table 1:

Level of Lecturers' Use of AI Tools for teaching and learning

Item	SA	A	D	SD	Mean	Std. D
I frequently use AI-powered teaching assistants in my instructional delivery.	165	215	37	33	1.86	.85
Adaptive learning platforms are regularly incorporated into my teaching.	87	44	56	263	1.90	1.20
Automated grading systems are often used for students' evaluations.	65	54	118	213	1.93	1.08
I utilize intelligent tutoring systems to assist students in learning.	33	16	84	317	1.47	.87
AI tools are regularly used in preparing lecture materials.	68	262	81	39	2.79	.79
AI is part of my teaching process for managing academic records.	66	25	101	258	1.77	1.08
I integrate AI tools in both online and offline instructional delivery.	78	20	120	232	1.87	1.11
I use AI tools to monitor students' academic progress.	41	47	110	252	1.72	.97
AI tools are applied in analyzing the effectiveness of my teaching methods.	52	25	118	255	1.72	1.00
I utilize AI-powered tools for providing feedback to students.	23	47	125	255	1.64	.86
Weighted Average						1.87

Key; *SD* = Strongly Disagree,D = Disagree,A = Agree,SA = Strongly Agree

Decision Value: *Low*=0.00-2.49, *High* = 2.50-4.00

Table 1 presents the level of lecturers' use of AI tools for instructional delivery in tertiary institutions in Ondo State. The table indicates that lecturers disagreed with most statements regarding AI tool usage, as reflected in the mean scores. The lecturers reported minimal use of AI-powered teaching assistants in instructional delivery ($\bar{x}$ = 1.86), adaptive learning platforms ($\bar{x}$ = 1.90), automated grading systems for student evaluations ($\bar{x}$ = 1.93), and intelligent tutoring systems for assisting students ($\bar{x}$ = 1.47). Similarly, lecturers expressed limited integration of AI tools in managing academic records ($\bar{x}$ = 1.77), monitoring students' academic progress ($\bar{x}$ = 1.72), and analyzing the effectiveness of their teaching methods ($\bar{x}$ = 1.72). Furthermore, the use of AI-powered tools for providing feedback to students ($\bar{x}$ = 1.64) was also rated low. However, lecturers agreed that AI tools are regularly used in preparing lecture materials ($\bar{x}$ = 2.79), which was the only item with a mean score above the decision threshold for high use. The weighted average score of 1.87 falls within the decision value range for ***low usage*** (0.00–2.49), indicating that the level of lecturers' use of AI tools for instructional delivery in tertiary institutions in Ondo State is low.

Research Question 2: What are the lecturers perceived as ease of use of AI tools for teaching and learning in Adeymi Federal University of Education Ondo?

Table 2
Lecturers' Perceived Ease of Use of AI Tools for teaching and leaning

Item	SA	A	D	SD	Mean	Std. D
AI tools for instructional delivery are easy to operate.	53	327	70	0	2.96	.85
The user interface of most AI tools is intuitive and user-friendly.	238	148	17	47	3.28	1.20
I can quickly learn to use AI tools without extensive training.	241	168	12	29	3.38	1.08
AI tools simplify the process of creating instructional materials.	110	286	34	20	3.08	.87
Technical issues with AI tools are minimal and easy to resolve.	85	286	79	0	3.01	.79
I find it easy to integrate AI tools into my teaching workflow.	114	279	57	0	3.12	1.08
AI tools require minimal effort to adapt to my instructional needs.	79	308	63	0	3.03	1.11
The features of AI tools are well-organized and easy to access.	50	383	0	17	3.03	.97

I can quickly train students to use AI tools for academic purposes.	41	386	0	23	2.98	1.00
I find the operation of AI tools to be less time-consuming compared to traditional methods.	166	261	0	23	3.26	.86
Weighted Average						3.11

Key; *SD* = Strongly Disagree,D = Disagree,A = Agree,SA = Strongly Agree
Decision Value: *Low*=0.00-2.49, *High* = 2.50-4.00

Table 2 presents the lecturers' perceived ease of use of AI tools for instructional delivery in tertiary institutions in Ondo State. The results indicate that lecturers generally agree that AI tools are easy to use, as reflected in the mean scores above the decision threshold for high ease of use (2.50–4.00). The lecturers agreed that AI tools are easy to operate ($\bar{x}$ = 2.96) and that most AI tools have an intuitive and user-friendly interface ($\bar{x}$ = 3.28). They also reported that they can quickly learn to use AI tools without extensive training ($\bar{x}$ = 3.38) and that AI tools simplify the process of creating instructional materials ($\bar{x}$ = 3.08). Additionally, technical issues with AI tools were perceived as minimal and easy to resolve ($\bar{x}$ = 3.01), and lecturers found it easy to integrate AI tools into their teaching workflow ($\bar{x}$ = 3.12).Further, lecturers agreed that AI tools require minimal effort to adapt to their instructional needs ($\bar{x}$ = 3.03), have well-organized features that are easy to access ($\bar{x}$ = 3.03), and that they can quickly train students to use AI tools for academic purposes ($\bar{x}$ = 2.98). They also perceived that AI tools are less time-consuming compared to traditional methods ($\bar{x}$ = 3.26). With a weighted average of 3.11, which falls within the high ease-of-use category, it can be inferred that lecturers perceive AI tools as easy to use for instructional delivery.

Research Hypothesis

Ho1: There is no significant difference between male and female lecturers use of artificial

intelligence for teaching and learning in Adeyemi Federal University of Education, Ondo.

Table 3:
Summary of T-test Showing Difference in Male and Female Lecturers' use of Artificial Intelligence (AI) for Learning and Learning.

Grouping Variable (Gender)	N	Mean	Std. D	Df	T	Sig.	Remark
Male	290	28.64	4.42	448	-2.328	.071	Not Significant
Female	160	29.29	1.15				

Table 3 shows the difference in the male and female lecturers' use of Artificial Intelligence (AI) for teaching and learning in Adeyemi Federal University of Education Ondo. The table shows that the mean score for male lecturers is 28.64 while that of female lectures is 29.29. The values of the mean scores do not reveal an appreciable difference. Therefore, there is no significant difference between male and female lecturers; use of Artificial Intelligence (AI) teaching and learning in Adeyemi Federal University of Education Ondo ($df = 448$; $t = -2.935$; $p > 0.05$). Hence, hypothesis 1 is retained.

Discussion of Results

From the research question one, the results show that lecturers, level of use of artificial intelligence for teaching and learning in Adeyemi Federal University of Education was very low. This is consistent with research finding of Okeke et al. (2023), who claimed that while lecturers may be skilled in AI applications, external barriers such as limited institutional support, high costs, and inadequate infrastructure significantly reduce usage rates. On the lecturers perceived ease of use of AI for teaching and learning, the study revealed that perceived ease of use of AI among lecturers was very high. This finding agrees with the finding of Abidoye (2024) who find out that lecturers find it easy and convenient to use technology for the teaching and learning in tertiary institutions in Ondo state. Similarly, Adeyemi and Falade (2023) found that lecturers who find AI tools easy to navigate are more likely to integrate them into their teaching practices.

The study further finds out that gender differences has no significant effect on lecturers' use of AI for teaching and learning. This finding is in line with the finding of Abidoye (2024) who find no significant different between male and female teachers' use of technology in the teaching and learning of Economics in secondary schools in Ondo State.

Conclusion

This study investigated the assessment of lecturer's use of artificial intelligence for teaching and learning in Adeyemi Federal University of Education Ondo, Ondo State, Nigeria. The study also examined the influence of gender on lecturers' use of AI for teaching and learning. The findings revealed that the level of use of artificial intelligence lecturers was very low. While the perceived ease of use artificial intelligence by lecturers was very high. The study further revealed that there was no significant gender influence among lecturers in the use of AI for teaching and learning in Adeyemi Federal University of education, Ondo. The study also concluded that the use of artificial intelligence for teaching and learning has emerged as a useful source for promoting learning and preparing both lecturers and students to participate actively in teaching and learning process.

Recommendations

Based on the findings and the review of relevant literature, the following recommendations were made:

1. University management should intensify training of lecturers to equip them with the necessary skills to integrate the use of AI into teaching and learning process.
2. The University authority should provide an enabling environment that is free of challenges confronting lecturers from effective use of AI tools for teaching and learning.

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