LECTURERS' PREPAREDNESS FOR THE UTILIZATION OF ARTIFICIAL INTELLIGENCE IN TEACHING AND LEARNING PUBLIC UNIVERSITIES IN SOUTH EAST, NIGERIA

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Abstract

The study examined lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria. Three research questions guided the study. The study adopted the descriptive survey design. The population of the study comprised 9,420 academic staff in public universities in Anambra State. The sample comprised 471 academic staff randomly drawn from the population of the study. Instrument titled: Questionnaire on Lecturers' Preparedness for the Utilization of Artificial Intelligence in Teaching and Learning (QLPUAITL). The instrument has 30-items comprising three clusters A, B and C structured on a four-point rating scale. The instrument was validated by three experts in education. Test on the data collected using Cronbach Alpha reliability method yielded coefficient values of 0.80, 0.72 and 0.75. Mean and standard deviation were used in analyzing the data. The mean value was used to answer the research questions while the standard deviation was used to determine the relatedness of the respondents' mean ratings. The study revealeda low level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria. The study concluded that various inhibiting factors such as lectures' concern that the use of artificial intelligence may eventually take their job and not having enough time to learn how to make use of AI to automate tasks. Based on the findings, the study recommended that to address lecturers' concerns and enhance their preparedness for utilizing artificial intelligence in teaching and learning, universities should provide comprehensive training programmes and continuous support for them.

Keywords: *Utilization of AI,Artificial Intelligence, AI in Universities, Teaching and Learning, Lecturers' Preparedness*

Introduction

University education serves as an important stage in the academic journey that shapes individuals for professional and personal growth. It provides an environment where students can engage with their chosen fields, gain specialized knowledge and develop critical thinking skills. Universities offer a diverse range of academic programmes and courses that cater to students' varied interests and career aspirations. The education in universities not only imparts theoretical knowledge but also emphasizes practical application, research and innovation by preparing students to contribute effectively to society. In Nigeria, university education extends beyond mere transmission of information to include collaborative inquiry, experiential learning, and promoting lifelong learning skills necessary for addressing complex challenges in today's world.

Teaching and learning at this stageof education involve a dynamic and interactive process that goes beyond traditional lecture methods. Modern pedagogical approaches incorporate technology, collaborative

projects and experiential learning to enhance students' engagement and comprehension. Endurance, Eunice, Uzoma, Andor andOrisakwe (2021) stated that university education is the biggest industry that touches every fabric of human endeavour, whose footings lie in educational activities. These educational activities are being pioneered by lecturers who engage in various pedagogical practices such as instructional delivery, assessment and grading of students' learning outcomes, career guardians, counseling services, and research processes. Getting these tasks done daily may result in emotional exhaustion, stress, and burnout and sometimes could lead to death. Therefore, it becomes imperative to introduce artificial intelligence (AI) to assist in reducing this mental stress.

Artificial intelligence (AI) is a branch of computer science focused on creating systems capable of performing tasks that typically require human intelligence. It is the simulation of human intelligence in machines programmed to think, learn, and perform tasks typically requiring human intelligence. These tasks include learning from experience, recognizing patterns, understanding natural language, making decisions and solving complex problems.Omojuwon and Ojo (2021) noted that artificial intelligence systems are designed to learn from data, adapt to new inputs and perform tasks autonomously to mimic human cognitive functions. In the view of Popenici and Sharon (2017), the future of higher education is intrinsically linked with developments in new technologies and the computing capacities of new intelligent machines.

With the rise of artificial intelligence solutions, it is increasingly important for educational institutions, especially universities in Nigeria, to embrace the new trend. Artificial intelligence has not only promoted changes in schools' teaching methods, learning methods, campus environment and curriculum, but the entire education industry is also undergoing changes through AI (Karsenti (2019). Artificial intelligence is now enhancing tools and instruments used in campuses worldwide. This innovation is believed to play an important role in promoting the reformation of teaching and learning in schools as it will bring new intelligent teaching tools, form new teaching and learning modes, and promote innovation in teaching evaluation methods (Anyadike, 2019). The question is, how prepared are university lecturers to embrace this new trend to enhance teaching and learning in Nigeria?

Despite the significant roles artificial intelligence plays in education around the world, its impact is yet to be felt in most Nigerian universities. Existing literature has shown contradiction in the utilization of artificial intelligence tools by lecturers. Research evidence has shown a low degree of the utilization of among lecturers (Amuchie, 2015; Nannim et al., 2018; Olanrewaju et al., 2014; Onah et al., 2020; Onasanya et al., 2011; Perifanou et al., 2021; Sulaiman et al., 2017). The integration of artificial intelligence can significantly reduce the workload on academic staff by allowing them to focus more on research, mentoring and student interaction. Olelewe and Onoh (2017) explained that when staff members are relieved of some tasks like; the provision of admission guidelines, scheduling of lecture time-tables, marking of assignments and grading of student learning experience, it will undoubtedly afford staff members the needed rest.

By automating routine administrative tasks, AI can create a more efficient and supportive academic environment and enhance the overall quality of education. A recent study has shown that most universities in Nigeria, have lost some of their staff to different forms of ailment ranging from; emotional exhaustion, and stress, just to mention a few (Endurance et al., 2021). In universities in South East, Nigeria, the case has not been different as both academic and non-academic staff are reported dead as a result of stress and different ailments. The implication is that when these staff members continue to go down, attention to teaching and learning declines, leading to poor-quality output. The recent events as recorded in most universities as regards the health of some staff members seem to suggest the school communities are yet to integrate artificial intelligence tools to reduce workload. It could be that academic staff (lecturers) have continued to fight the new trend on the basis that it would replace them in their jobs. Maybe they are not mentally prepared as a result of an inadequate knowledge base to handle the switch. Perhaps, they have not been trained in the use of artificial intelligence tools. There could be other factors inhibiting lecturers' preparedness to adopt AI tools in teaching and learning. To find answers to these, the study sought to examine lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria.

Research Questions

The following research questions guided this study:

1. What is the level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria?
2. What are factors inhibiting lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria?

3. What are the opportunities associated with the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria?

Method

The study adopted the descriptive survey design. The study was carried out in South East, Nigeria. The University selected for this study are NnamdiAzikiwe University, ChukwuemekaOdumegwuOjukwu University and Imo State University. The population of the study comprised 9,420 lectures from these selected universities. The sample comprised 471 academic staff randomly drawn from the population of the study. The sample size represent 5% of the total population for the study. Instrument titled: Questionnaire on Lecturers' Preparedness for the Utilization of Artificial Intelligence in Teaching and Learning (QLPUAITL) was used for data collection. The instrument has 30-items comprising three clusters, A, B and C. Cluster A contains 10 items that elicits information on the level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning; Cluster B elicits information on factor inhibiting lecturers' preparedness for the utilization of artificial intelligence; Cluster C elicits information on the opportunities associated with lecturers' utilization of artificial intelligence in teaching and learning. The instrument was validated by three experts in education. The reliability of the instrument was ascertained using Cronbach Alpha reliability method which yielded coefficient values of 0.80, 0.72 and 0.75 for clusters A, B and C respectively. Mean and standard deviation were used in analyzing data collected for the study. The mean value was used to answer the research questions while the standard deviation was used to determine the relatedness of the respondent's mean ratings. In analyzing the research questions, items with mean rating of 2.50 and above were regarded as agree while mean rating below 2.50 was regarded as disagree.

Results

Research Question One: What is the level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria?

Table 1: Mean Ratings on the Level of Lecturers' Preparedness for the Utilization of Artificial Intelligence in Teaching and Learning in Public Universities in South East, Nigeria

S/N	Items	Mean	SD	Remark
As a lecturer,				
1.	I have received sufficient training on AI technologies applicable to education	2.47	.54	**LL**
2.	I feel confident in my ability to use AI tool for teaching	2.44	.52	**LL**
3.	I am aware of the latest AI advancements that can be integrated into teaching	2.37	.53	**LL**
4.	I regularly attend workshops in preparation to using AI in teaching my students	2.38	.55	**LL**
5.	I am knowledgeable about the ethical consideration related to the use of artificial intelligence in teaching and learning	2.41	.52	**LL**
6.	I am currently undergoing training on how to integrate artificial intelligence into my classroom teaching	2.31	.61	**LL**
7.	I can make use of AI-powered tools to analyze student performance in my class	2.40	.57	**LL**
8.	I have been participated in AI-focused research projects	2.43	.63	**LL**
9.	I have access to AI-based platforms for creating course content	2.34	.52	**LL**
10.	I am involved in pilot projects experimenting with AI in the classroom	2.52	.57	**HL**
	Mean of Means	**2.40**	**.56**	**LL**

As shown by the total mean score of 2.40 in Table 1, lecturers' level of preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria is at low level.*The item by item analysis shows that the respondents rated item 1-9 as being prepared to a low level with meanranging from 2.31 to 2.44. The remaining item (item 10) with mean of 2.52was rated as being prepared to a high level.*

Research Question Two: What are factors inhibiting lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria?

Table 2: Mean Ratings on the Factors Inhibiting Lecturers' Preparedness for the Utilization of Artificial Intelligence in Teaching and Learning in Public Universities in South East, Nigeria

S/N	Items As a lecturer,			Remark
11.	I am concerned that the use of AI tools may eventually take my job	2.86	0.81	**Agree**
12.	I do not have enough time to learn how to make use of AI to automate tasks	3.06	0.87	**Agree**
13.	The cost of maintaining AI learning tools are prohibitive	3.16	0.74	**Agree**
14.	I find the use of artificial intelligence complex to understand	3.09	0.98	**Agree**
15.	I have ethical concerns regarding the use of AI in teaching and learning	3.10	0.85	**Agree**
16.	There is a lack of technical support available to help me integrate AI tools into my teaching practices	3.12	0.84	**Agree**
17.	I have not received adequate training on how to use AI tools in teaching and learning	2.65	0.70	**Agree**
18.	My institution does not provide sufficient support for the adoption of AI in teaching and learning	3.04	0.73	**Agree**
19.	I do not have access to the necessary AI tools and resources for effective teaching and learning	2.99	0.72	**Agree**
20.	I am not aware of the potential benefits of using AI in teaching and learning	3.11	0.78	**Agree**
	Mean of Means	**3.01**		**Agree**

The analysis in Table 2 shows that the respondents agree that all 10 items as factors inhibiting lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria. These items include concern that the use of AI tools may eventually take their jobs, enough time to learn how to make use of AI to automate tasks, ethical concerns regarding the use of AI in teaching and learning, lack of technical support available to help to integrate AI tools into teaching practices, not received adequate training on how to use AI tools in teaching and learning, no access to the necessary AI tools and resources for effective teaching and learning and no awareness of the potential benefits of using AI in teaching and learning.

Research Question Three: What are the opportunities associated withthe utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria?

Table 3: Mean Ratings of the Opportunities Associated With the Utilization of Artificial Intelligence in Teaching and Learning in Public Universities in South East, Nigeria

S/N	Items	Mean	SD	Remark
21.	Provides access to advanced educational resources that may not be otherwise available	2.58	.72	**Agree**
22.	AI provides valuable data-driven insights to help improve teaching methods	2.50	.61	**Agree**
23.	Facilitates collaborative learning experiences through AI-powered online discussion forums	2.67	.61	**Agree**
24.	Empower academic staff with real-time data analytics to better understand student learning patterns	2.74	.71	**Agree**
25.	Support diverse learning styles thereby making education more inclusive	2.69	.68	**Agree**

26. Facilitate collaborative learning by connecting students with experts worldwide	2.58	.69	**Agree**
27. Enhances accessibility for students with disabilities by providing tools like speech-to-text	2.55	.75	**Agree**
28. Empower lecturers with teaching assistants to help manage large class sizes	2.75	.78	**Agree**
29. Expansion of access to education through online learning opportunities	2.68	.75	**Agree**
30. Facilitate professional development opportunities for academic staff through online training programmes	2.84	.78	**Agree**

The analysis in Table 3 indicates that the respondents agree toall the 10 listed items asthe opportunities associated with the integration of artificial intelligence in teaching and learning in public universities in South East, Nigeria. The mean ratings for the 10 items ranged from 2.50 to 2.84.

Discussion of Findings

Findings on the level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria showed a low level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria. This is as a result of the respondents not agreeing among others that they have received sufficient training on AI technologies applicable to education, feel confident in their ability to use AI tools for teaching, regularly attend workshops in preparation for using AI in teaching their students, have been participating in AI-focused research projects and have access to AI-based platforms for creating course content. The findings align with the findings of Thomas (2022) who revealed that lecturers rarely used AI for education in Nigerian Universities. Similarly, Agbatogun (2013) indicated that most faculty members were yet to utilize emerging digital technologies for teaching and learning. Edumadze et al. (2014) also revealed that lecturers' use of technology for instructional delivery was low. Smith, Johnson and Brown (2023) reported a low extent of use of artificial intelligence in some institutions of higher learning. Despite the potential benefits of artificial intelligence, university lectures and management have been slow to fully adopt it to enhance quality teaching and learning in institutions of higher learning.

Findings on the factors inhibiting lecturers' preparedness for the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria revealed that many factors such as lectures' concern that the use of AI tools may eventually take their job, not having enough time to learn how to make use of AI to automate tasks, the prohibitive cost of maintaining AI learning tools, finding the use of artificial intelligence complex to understand, no adequate training on how to use AI tools in teaching and learning and not having access to the necessary AI tools and resources for effective teaching and learning. The findings agree with the findings of Oluwafemi and Adetunmbi (2022) who revealed that lecturers believe artificial intelligence would be an able agent for optimizing the higher education industry but would be able to replace lecturers when necessary. Endurance et al. (2021) found that factors such as instability in government administration, inadequate budget allocation in education, and inadequate power supply inhibit artificial intelligence in the teaching and learning process. Teachers' anxieties about these issues regarding artificial intelligence tools can create resistance to the utilization of artificial intelligence in the classroom.

Findings on the opportunities associated with the utilization of artificial intelligence in teaching and learning in public universities in South East, Nigeria revealed that various opportunities exist. Such opportunities include access to advanced educational resources that may not be otherwise available, facilitating collaborative learning experiences through AI-powered online discussion forums, empowering academic staff with real-time data analytics to better understand students' learning patterns, support diverse learning styles thereby making education more inclusive, facilitate collaborative learning by connecting students with experts worldwide, empower lecturers with teaching assistants to help manage large class sizes among others. The findings are in agreement with the findings of Popenici and Sharon (2017) who revealed that artificial intelligence solutions relate to tasks that can be automated but cannot be yet envisaged as a solution for more complex tasks of higher learning. Popenici and Sharon also revealed that AI solutions open a new horizon of possibilities for teaching and learning in higher education. Endurance et al. (2021) noted that the integration of artificial intelligence in education can enhance teaching. With the utilization of artificial

intelligence in teaching and learning, learners will have access to an unprecedented amount of relevant information to enable them to manage their learning activities as well as explore relevant learning materials, and become inquisitive, rather than solely passive recipients of knowledge and information from only the lecturers.

Conclusion

University education offers an environment for students to specialize in their chosen fields, develop critical thinking skills and engage in research and innovation. In Nigeria, universities emphasize practical application, collaborative inquiry, and experiential learning to prepare students for complex global challenges. With the rise of artificial intelligence, integrating AI into educational practices can reduce lecturers' workloads, enhance teaching quality, and improve overall academic efficiency. Despite a low level of lecturers' preparedness for the utilization of artificial intelligence in teaching and learning, various inhibiting factors such as lectures' concern that the use of AI tools may eventually take their job, not having enough time to learn how to make use of AI to automate tasks, and the prohibitive cost of maintaining AI learning tools hinder the utilization. While acknowledging the potential of artificial intelligence in education, it is important to recognize that it facilitates collaborative learning experiences, empowers academic staff with real-time data analytics to better understand students' learning patterns, and supports diverse learning styles thereby making education more inclusive.

Recommendations

On the basis of the findings of this study, the following recommendations were made:

1. Universities should invest in the necessary infrastructure and provide technical support to maximize the use of artificial intelligence platforms among lecturers.
2. To address lecturers' concerns and enhance their preparedness for utilizing artificial intelligence in teaching and learning, universities should provide comprehensive training programmes and continuous support. These programmes should focus on simplifying the use of AI tools, and ensuring lecturers feel confident in integrating these technologies into their teaching practices.
3. Recognizing the transformative potential artificial intelligence offers to education, such funding endeavours can significantly enhance research and development in education, government in collaboration with Non-governmental organizations (NGOs) should contribute financial support towards artificial intelligence initiatives within institutions of higher learning to enhance teaching and learning.

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