



## Assessment of the Acceptability of AI Technologies for Online Teaching Among Lecturers of Colleges of Education in North-West, Nigeria

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### ABSTRACT

The study examined the acceptability of AI technologies for online teaching among lecturers of colleges of education in north-west, Nigeria. The study was carried out with two objectives, which were towards finding out the extent of acceptability of AI technologies for online teaching among lecturers of Colleges of Education in North-west, Nigeria; and into determining the lecturers' utilisation of AI technologies for online teaching in Colleges of Education in North-west, Nigeria. Two research questions and two hypotheses were formulated in line with the above-mentioned objectives. The study employed a descriptive survey design with a total population of seven thousand five hundred and seventy-nine (7579) and a sample size of 365, which was arrived at using the researcher advisor table. The Data for the study was collected using a questionnaire developed by the researcher titled Lecturers' Acceptability and utilisation of AI Technologies for Online Teaching Question (LAUAITOTQ). Data collected were analyzed statistically using SPSS. At a descriptive level, the research questions were answered using mean and standard deviation. At inferential level, the hypotheses were tested using Chi-square statistics. The result of the study revealed that the acceptability of AI technologies for online teaching did not differ significantly among lecturers from colleges of education in North-west, Nigeria. Another finding from the study indicated that there was no significant difference in lecturers' utilization of AI technologies for online teaching in College of Education for Northwest, Nigeria. It was recommended that teacher educators should positively accept and utilise AI technologies for online teaching; and teachers, school managers, and the National Commission for Colleges of Education (NCCE) should promote the use of AI technologies and provide Internet facilities in teacher education institutions.

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### INTRODUCTION

The application of Information and Communication Technologies (ICTs) has changed the path of human activities in terms of accuracy and speed of information dissemination the World over. The dynamic nature of computer technology from first generation to fifth generation give birth to Artificial Intelligence (AI), and this has

impacted in all human endeavours including education. These changes were noticeable in the way we teach, learning resources, presentations, researches, school/classroom communications, registrations, examinations, and of course Online Learning (OL). The integration of ICT in education has contributed greatly towards changing the course of teaching and learning from conventional

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to developmental approach in developed, developing and even underdeveloped countries of the World. This development, calls for quest of alternative teaching methods in teacher education institutions for the production of qualified and competent teachers in Nigeria To this end, the National Commission for Colleges of Education Minimum Standards (FRN, 2020) stated that the teaching and learning at the Nigerian Certificate in Education (NCE) level should be geared towards producing competent teachers with the much-needed skills to be able to develop functional knowledge of concepts and principles, as well as build capacities of teacher educators in ICT.

Conversely, the Artificial Intelligence (AI) has revolutionized the World, and its impact on education, specifically in teacher education, is increasingly significant. Artificial Intelligence is concerned with the development and design of intelligence in an artificial device. The term AI was coined by John McCarthy in 1956, though there was the early work of British logician Alan Turing in the 1930s to advancements at the turn of the 21st century. (Kaplan & Haelein, 2018). AI is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience (Copeland, 2023). Artificial intelligence usually involves copying human intelligence processes by machines, especially computer systems. Stryker and Kavlakoglu (2024), considered Artificial intelligence (AI) as technology that enables computers and machines to simulate human learning, comprehension, problem-solving, decision making, creativity and autonomy. AI software and devices are noticeable in all human endeavours; in education, science, arts, economy, technology, medicine, fashion, agriculture, transportation, communication etc.

Applications and devices equipped with AI can see and identify objects. They can understand and respond to human language. They can learn from new information and experience. They can make detailed

recommendations to users and experts. They can act independently, replacing the need for human intelligence or intervention (a classic example being a self-driving car). Examples of AI applications include expert systems, natural language processing (NLP), speech recognition and machine vision. Artificial Intelligence (AI) can analyze educational content, teacher discourse, and student responses to foster improvement in teaching and learning (Stryker et-al, 2024). In this regard, AI had changed the education system of the 21<sup>st</sup> century era by making it simple, accessible, presentable and adaptable. AI technologies offer the potential to transform traditional educational models by providing adaptive and tailored approaches that enhance student engagement, learning efficiency, and overall educational experiences (Tian, Sun, Liu, Sarkar, & Liu, 2024). AI is well pronounced in all human activities, and in a near future, it will reshape the academic World most specially teacher education.

Some AI tools used in schools include; ChatGPT, Chatbot, Automated grading, Quillbot, Grammarly, automate administrative tasks, ChatPDF, 360 Learning, Generative AI for educators, Copilot, Gemini, Instructional assistant, Quizlet, etc. These AI technologies were significant to school teaching and learning, and therefore need to be fully accepted and utilised by teacher educators for online teacher education in Nigeria. If AI technologies are well accommodated and utilize by teachers, it can aid online teaching in colleges of education in Nigeria. Online teaching is now the order of the day in the 21<sup>st</sup> century teaching and learning. With the global challenges in the area of health, security and economy, online learning is now well practiced by many institutions of learning in the world. Online learning involves the use of Information and Communication Technologies (ICTs) in teaching and learning.

Online learning involves the use of computer resources, internet enabled self-learning packages, optical fiber, satellites, radio, technologies, interactive CDS, teleconferencing and all forms of technological hardware and software. Online-learning is a subset of newer

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information and communication technology that integrates computer technology like internet and other information management systems into learning of new behaviours. Land and Meyer (2010) simply perceived online learning as the utilization of internet or wireless technologies in delivering wide range of training solution to learner(s).

Ree, Mackay, Martins, Conole and Davis cited in Lazrus and Nonye (2015), saw online learning as accessing learning from computer via the internet, intranet or any other information technology system. They noted that a wide set of applications and processes such as CD-ROM, Web. Based learning, satellite Broadcast, computer-based learning, virtual classrooms and digital collaborations, instructional content delivery via the internet, intranet, Extranet, Audio and video tapes, interactive TV, etc. are the main used in online learning. Khan cited in Ahmed, (2023) defines online instruction as an innovative approach for delivering instruction to a remote audience, using the Web as the medium. However, online learning involves more than just the presentation and delivery of the materials using the Web. The learner and the learning process should be the focus of online learning.

In teaching and learning, acceptability and perception of a particular situation by the teachers and the learners makes the learning meaningful and an effective one most especially in achieving the set goals. Acceptability has become a key consideration in the design, evaluation and implementation of teaching and learning. Dillon and Morris cited in Yiong and Wah (2008), defined acceptance as "the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support. Acceptability is about attitude, and assessment of the situation before the commencement of an action. Acceptability refers to assessment of the acceptability, suitability, adequacy or effectiveness of the learning situation. For a better curriculum implementation, there should be a great deal of acceptability by teachers. Acceptability of an intervention is a necessary precursor for implementation (Sekhon

et-al, 2017). In this regard, multiple facets of acceptability seem important to successful implementation of the curriculum contents. Teachers and learners who had high level of acceptance may appreciate web-based course (online teaching).

It appears that traditional teachers are not ready to accept AI technologies as part of their daily routine in teaching and learning. Perhaps some teachers in Colleges of Education Perceived AI as a means for the young age to connect to the world. It seems that mixed reaction is observed on how teachers accept and be ready to involve themselves on the use of AI tools for online teaching. In this regard, Iqbal and Ahmad (2010); Bacow, Bowen, Guthrie, Lack and Long, (2012); and Barbour (2010) reported that there are mixed perceptions among teachers of tertiary institutions with the respect to either stay with the traditional or the online learning situation. Some teachers are of the opinion that traditional classroom is better while others perceived the online learning as a better and easier means of teaching with a wider coverage in teaching and learning. Moreover, it appears that most of the colleges of education do not have basic materials and equipment to support the online teaching, let alone accommodating the AI technologies in their teaching and learning.

Perhaps Government, College management and other relevant authorities are not fully accepting AI technologies for online teaching in colleges of education. This may be connected to a lot of challenges like cost of IA tools, power supply, internet connectivity, maintenance etc. In Nigeria, although the potential of online teaching has still not been fully tapped, its implementation may not have yielded the desired results in view of other challenges such as the high cost of computers, internet bandwidth and poor power supply, among others (Ibinaie, 2012; Madu & Pam, 2011). In the same vein, research conducted by Adedoja, Botha and Ogunleye, 2012, has shown that technologies such as electronic learning (e-learning), mobile learning (m-learning) and more recently AI technologies may have the potential to facilitate teaching and learning, thereby addressing the perception and acceptability of online teaching in Nigeria teacher

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education institutions. This prompted the study to look critically into the Acceptability and utilization of AI technologies for online teaching among teacher educators in colleges of education in Nigeria. The following research questions and hypotheses were used in this study:

### Research Questions

1. What is the level of acceptability of AI technologies for online teaching among lecturers of Colleges of Education in North-west, Nigeria?
2. How do lecturers in the North West, Nigeria utilise AI technologies?

### Hypotheses:

**HO<sub>1</sub>:** There is no significance difference on lecturers' acceptability and AI technologies for online in Colleges of Education in North-west, Nigeria.

**HO<sub>2</sub>:** There is no significance difference on Lecturers' utilisation and AI technologies for online teaching in Colleges of Education in North-west, Nigeria.

### METHODOLOGY

The research design used in this study was descriptive survey. According to Akuezilo and Agu cited in Agbanu, Nwankwo, Ogalue, and Olorunfemi (2019), a survey design is preferable when developing information on opinions, attitudes and perceptions of individuals in sparsely populated and distantly located population. This situation fits well with this study, and therefore the design was adopted for the study. The target population of the study comprises of all the academic staff of Colleges of Education in the North-West zone. which was obtained as seven thousand five hundred and seventy-nine (7579).

The Sample size was three hundred and sixty-five (365). However, the reason for this selection is in line with the research advisory table (2006), which suggests that a population of 7500 could consider 365 as sample at 0.05 level of degree of accuracy/margin of error. Stratified random sampling was used for the sampling of the colleges in the seven (7) states which according to

Depersio et-al (2021) is a method used to cull a smaller sample size from a larger population and use it to research and make generalizations about the larger group. The Research instrument used for the study was researcher design questionnaire developed by the researcher tagged "Lecturers' Acceptability and Utilisation of Online Teaching Question (LAUOTQ)". The content validity method was used as it is considered the most suitable for verification of the questionnaire items. The content validity of the research instrument was established by the experts in the field of curriculum from the department of foundations and curriculum, faculty of education Ahmadu Bello University Zaria.

The data collected from the pilot study was statistically analyzed for the purpose of statistical co-efficient. The reliability of the instrument was obtained using Cronbach Alpha reliability co-efficient. A reliability co-efficient obtained for Lecturers' Acceptability and utilization was 0.77. The data collected were analyzed using SPSS statistics version 25. At descriptive level, the research questions were answered using mean and standard deviation. At inferential level, the hypotheses were tested using Chi-square test at alpha of 0.05 level of significance to determine differences in the opinions of lecturers' acceptability and utilization of online teaching in Colleges of Education.

### RESULTS

In this study, research questions and corresponding hypotheses were formulated for answers and analysis respectively. The research questions were responded as follows:

#### Research Question One:

What is the level of acceptability of AI technologies for online teaching among lecturers of Colleges of Education in North-west, Nigeria?

Table 1 was used to analyse the level of acceptability of AI technologies for online teaching in Colleges of Education.



**Table 1:** Mean and Standard Deviation of level of acceptability of AI technologies in online teaching

Item	N	Mean	Std. Dev
1. AI Technologies will compromise the teaching personal and presence that lecturers usually maintain during in-person instruction	365	3.13	1.06
2. AI tools for online teaching makes lecturer like a novice teacher educator again rather than an experienced professional	365	3.00	1.15
3. Instead of relying on synchronous into action, lectures imagine creating opportunities to increase students' authority regarding when and how they learn Leg-student self-spacing of learning and selection of leaning materials	365	3.07	1.08
4. Lecturers feel prepared to identify students' potential inequitable access to AI tools for online learning necessities (e.g., internet access, AI applications, device access, safe place to learn etc.)	365	3.02	1.11
5. Lecturers accept computer and AI technologies in lesson delivery (eg online or blended learning)	365	3.16	1.10
6. Lecturers accept Computer/AI tools for teaching and student rating	365	3.08	1.09
7. Lecturers accept projectors and AI technology for lesson delivery and presentations	365	3.09	1.11
8. Lecturers have strategies to help manage fear and concerns they might have when they teach with AI tools outside of the regular mode of delivery (e.g., in-person, online, blended)	365	3.23	1.04
9. It will be better to try out AI tools before the lecturers have personally mastered them fully	365	3.09	1.07
10. Lecturers are happy to accept and use Computer/AI technologies during teaching	365	3.03	1.09
11. Lecturers give assignment to students via e-mails	365	3.10	1.08
12. Lecturers encourage students to be computer literate and accept AI Technologies like Grammarly and ChatGPT	365	3.09	1.07
13. Lecturers are familiar with software to send their examination questions electronically to examination office	365	3.22	1.05
14. Majority of the lecturers have their personal computers	365	3.08	1.08
15. Lecturers carry their computers around all the time	365	3.08	1.09
Average Total		3.10	1.08

Table 1 showed that the cumulative mean was 3.10, which was above the bench mark of 2.50. This meant that rating on level of acceptability by lecturers on AI technologies for online teaching was high and significant. This was supported by cumulative standard deviation from mean of 1.08. At inferential level, the acceptability of AI technologies for online teaching, is tested in the related hypothesis below;

**HO<sub>1</sub>:** There is no significance difference on lecturers' acceptability and AI technologies for online in Colleges of Education in North-west, Nigeria.

Chi-square was also used to test for the differences among the lecturers compared with the actual implementation. Below was the summary.

**Table 2:** Showing Chi-square test comparing lecturers' acceptability of AI Technologies for online teaching to actual implementation in colleges of education in North-west, Nigeria

N	X	SD	X <sup>2</sup> cal	DF	A	X <sup>2</sup> crit	P value
365	1.10	1.08	2.74	363	0.05	0.949	.05

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As shown in table 2 above, the test yielded a chi-square value of 2.74 and a p-value significance of 0.949, which is much greater than the cut-off of 0.05. On this basis, the null hypothesis is hereby rejected. This indicate that there is significant difference between how acceptable lecturers find AI technologies for online

instruction and the current reality of its implementation.

### Research Question Two:

How do lecturers in the North West, Nigeria utilise AI technologies?

**Table 3:** Mean and Standard Deviation of extent of utilisation of AI technologies in online teaching

Item	N	Mean	Std. Dev.
1. Lecturers use the internet/AI tools to search for instructional materials online	365	3.24	1.03
2. Lecturers use WhatsApp platform to give assignments to their students	365	3.03	1.08
3. Some lecturers use online platforms/AI Apps to meet with students once or twice every semester.	365	3.11	1.09
4. Some lecturers use Zoom application to meet with their students online	365	3.08	1.05
5. Lecturers ask their students to use AI tools like ChatGPT in writing their assignments sending it through e-mails	365	3.05	1.11
6. Lecturers use YouTube short videos in teaching	365	3.17	1.10
7. The majority of students have Android phones which they use for browsing relevant AI technologies	365	3.14	1.06
8. Lecturers have AI applications like Grammarly and Chatbots in their computers	365	2.87	1.12
9. Lecturers search for lecture notes via the Internet using AI tools	365	3.15	1.12
10. Interacting with my students online is fun	365	3.31	1.01
11. Lecturers use internet-enabled computers for adopting AI tools in teaching	365	2.94	1.13
12. Lectures use AI technology channels in teaching	365	3.19	1.07
13. Lectures give printed materials to students	365	3.36	0.95
14. Lecturers use their smartphones to assess information from the internet	365	2.99	1.12
15. Lecturers discuss AI Technologies in teaching and learning using social media groups	365	3.06	1.21
Average Total		3.11	1.08

From table 3 above, it could be inferred that, all the mean scores in the questions raised had a mean above the bench mark. The cumulative mean was found to be 3.11, which was also over the bench mark of 2.50. this indicated that, the extent of lectures utilization of AI technologies for online teaching was highly significant. This was supported by the cumulative standard deviation from the mean value, which was found to be 1.08.

The Utilisation of AI technologies for online teaching, is tested in the related hypothesis below;

**HO<sub>2</sub>:** There is no significance difference on Lecturers' utilisation and AI technologies for online teaching in Colleges of Education in North-west, Nigeria.

In testing the above hypothesis, a Chi-square test was employed. Below was the summary:

**Table 4:** Chi –square test on lecturers and actual implementation level on utilization of AI technologies for online teaching in colleges of education in Northwest, Nigeria

N	X	SD	X <sup>2</sup> cal	DF	A	X <sup>2</sup> crit	P value
365	3.11	1.08	12.50	363	0.05	0.130	.05

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From table 4, chi-square test yielded a value of 12.5 and a probability level of 0.130. Since the p-value is greater than 0.05, the null hypothesis is hereby retained. This means there is insufficient evidence of a statistically significant difference between how AI technologies for online teaching is being utilized by lecturers compared to current implementation levels.

### SUMMARY OF FINDINGS

From the results presented and interpreted in this study, the major findings are summarized as follows:

1. There is no significant difference between lectures assessed acceptability of AI technologies and the actual implementation of online teaching in northwest Nigeria (chi – square value of 1.71 and a p-value significance of 0.949).
2. There is no significant difference in lecturers' utilization of AI technologies for online teaching in colleges of education in northwest Nigeria. (chi-square value of 12.50 and a probability level of 0.130)

### DISCUSSION OF FINDINGS

The results obtained from Research Question One revealed that acceptability of online teaching did not differ significantly among lecturers in colleges of education in north-west Nigeria. Therefore, hypothesis one was accepted because finding suggests that lecturers view online pedagogical approaches favorably and do not perceive strong barriers to their adoption. This finding aligns with Wingo, Ivankova, and Moss (2017), who observed that the lack of difference between views and realities indicates that lecturers feel online teaching modalities could reasonably be adopted given present circumstances.

The finding of research question two showed that there was no significant difference in lecturers' utilization of AI technologies for online teaching in colleges of education in north-west Nigeria. Therefore, null hypothesis two is accepted. It revealed a consistent and comparable level of engagement with online teaching practices among educators. This finding reflects a degree of

uniformity in how lecturers incorporate AI technologies for online teaching methods into their instructional strategies, and is in agreement with the findings of Gombe et al., 2016.

### CONCLUSION

AI has become the order of the day in the 21<sup>st</sup> century education arena. AI technologies are now noticeable in all human endeavours, and as such teachers should not be left behind on this important human development. Teacher educators should try their possible best in joining the race for effectiveness and productivity in teaching and learning. Based on the findings of the research, it was concluded that; there was no significant difference in the acceptability of AI technologies for online teaching among lecturers of colleges of education in northwest Nigeria; and there was no significant difference in lecturers' utilization of AI technologies for online teaching in colleges of education in northwest Nigeria.

### RECOMMENDATIONS

Based on the findings of this study, the researcher recommends as follows:

1. Teacher educators should positively accept AI technologies for online learning as effective teaching in colleges of education.
2. Government, college management and other relevant stakeholders should provide ICT and internet facilities to support and encourage teacher educators to use AI technologies in Colleges of Education in Nigeria.
3. Teachers and school managers should be supported to participate on AI technology workshops for online teaching.
4. Teacher education institutions should collaborate with governmental and non-governmental agencies on the provision of internet facilities to support AI technologies for online learning.

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