



**ARTIFICIAL INTELLIGENCE COMPUTER SCIENCE ASSESSMENT
IMPLEMENTATION AMONG COLLEGE OF EDUCATION LECTURERS IN
NASARAWA STATE**

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Abstract

This study investigates the extent to which Artificial Intelligence (AI) tools are utilized in the implementation of computer science assessment by lecturers in Colleges of Education across Nasarawa State, Nigeria. Four research questions and two hypotheses guided the study. The research adopted descriptive survey and correlational designs. The entire population of 37 Computer Science lecturers across the three Colleges of Education in Nasarawa State was used, given its manageable size. A 4-point rating scale instrument titled Questionnaire on Assessment Implementation among College of Education Lecturers in Nasarawa State Tertiary Institutions was employed for data collection, with a Cronbach's alpha coefficient of 0.86 ensuring its reliability. The Data were analysed using Mean, Standard Deviation, and point biserial and Pearson Product-Moment Correlation statistics. Findings revealed that lecturers demonstrated a high level of awareness and adoption of AI tools such as ChatGPT, Gradescope, and CodeGrade for assessment purposes. AI was perceived as highly effective in promoting objectivity, accuracy, and timely feedback in evaluating. However, inadequate infrastructure, limited institutional support, and ethical concerns were identified as major challenges hindering full implementation. Results further indicated a significant positive relationship between lecturers' awareness of AI tools and their implementation of computer science assessment, while no significant gender difference was found in AI adoption. The study concluded that AI awareness and perceived usefulness are strong predictors of adoption. It recommended institutional investment in ICT infrastructure, continuous capacity building, and clear policy frameworks to support sustainable AI integration in assessment practices.

Keywords: Artificial Intelligence, Computer Science Lecturers, Nasarawa State

Introduction

Globally, the education system has experienced a significant transformation driven by rapid advances in digital technology, particularly Artificial Intelligence (AI). Artificial Intelligence refers to the simulation of human intelligence in machines that are programmed to think, learn, and make decisions similar to humans (Cardona et al., 2023). The integration of AI into teaching, learning, and assessment processes has increasingly become a strategic component of higher education reform worldwide. The educational sector, especially in developing countries such as Nigeria, is gradually exploring the potential of AI to improve instructional delivery, enhance assessment systems, and promote evidence-based learning outcomes.

Assessment constitutes a critical aspect of the teaching and learning process, serving as a tool to measure students' cognitive, affective, and psychomotor achievements. In computer science education, assessment goes beyond testing theoretical understanding; it also involves evaluating practical problem-solving skills, algorithmic thinking, and programming proficiency. Traditionally, assessment implementation among lecturers in Colleges of Education has been manual, subjective, and time-consuming (Jayme, 2025). However, the emergence of AI technologies such as machine learning, natural language processing, and intelligent tutoring systems has provided innovative ways of assessing students more objectively and efficiently.

Artificial Intelligence has been used to automate test generation, mark objective and programming-based questions, detect plagiarism, and provide personalized feedback to learners (Manorat et al., 2025). AI-based assessment systems are designed to analyse students' responses and generate instant reports that help lecturers monitor progress and identify learning gaps. These capabilities significantly reduce human bias, enhance scoring accuracy, and allow lecturers to focus on higher-order pedagogical tasks. AI applications in education can transform assessment practices by providing adaptive testing environments that tailor questions to students' individual learning levels, thus promoting fairness and inclusivity (Wang et al., 2024).

In Nigeria, the integration of AI in education is still at an emerging stage. Although several universities and tertiary institutions have begun experimenting with digital tools for online assessment, many Colleges of Education still rely heavily on conventional, paper-based evaluation methods (Adebayo & Olamide, 2021). These traditional methods often lead to inefficiencies, inconsistencies in grading, and delayed feedback. Moreover, the volume of students in Nigerian tertiary institutions makes manual grading cumbersome and prone to error. AI-based assessment tools such as automated grading systems, plagiarism detectors, and programming code evaluators can significantly ease the workload of lecturers, improve reliability, and ensure timely feedback to learners.

The implementation of AI-driven assessment systems in computer science education is particularly relevant because the discipline inherently involves computational thinking, data analysis and programming, all of which align with AI's core

capabilities (UNESCO, 2019). For example, AI can evaluate coding assignments, analyse algorithm efficiency, and detect syntax or logical errors automatically. This process not only saves time but also allows lecturers to identify students' learning challenges and customize instructional strategies accordingly. Despite these advantages, the adoption of AI in computer science assessment among College of Education lecturers in Nasarawa State remains limited, mainly due to infrastructural, technical, and policy-related challenges.

Nasarawa State, located in the North-Central region of Nigeria, hosts several tertiary institutions, including Colleges of Education that are mandated to train teachers in science and technology disciplines. The lecturers in these institutions play a vital role in shaping future educators who will teach computer science at the basic and secondary education levels. However, their assessment practices often face challenges such as inadequate access to technology, insufficient training in AI tools, and inadequate institutional support. Studies have shown that without adequate technological infrastructure and professional development, lecturers may struggle to integrate AI effectively into their assessment practices (Johnson et al., 2016).

Also, ethical considerations such as data privacy, algorithmic bias, and transparency are emerging concerns in AI-driven assessment. Lecturers and administrators should ensure that AI systems used for evaluation are fair, explainable, and aligned with educational objectives. For instance, when AI grading systems are poorly designed or trained on biased data, they may produce inequitable outcomes that disadvantage certain groups of students (Wang, 2024). Therefore, a balance should be maintained between technological innovation and ethical responsibility in the deployment of AI in assessment.

Institutional and policy support also play a crucial role in AI adoption. Government policies, funding availability, and administrative commitment to technology integration determine how effectively AI tools can be implemented. The Nigerian National Policy on ICT in Education emphasizes digital transformation and the use of emerging technologies to improve quality education (Abdul'aziz Inusa et al., 2025). However, practical implementation at the College of Education level has been slow, particularly in rural and semi-urban areas such as Nasarawa State. Without sustainable investment and training programmes, the potential of AI in enhancing computer science assessment remains underutilized.

Moreover, the lecturers' perception and readiness to adopt AI tools influence the success of implementation efforts. Some lecturers may view AI as a complex and intimidating technology rather than as a supportive teaching material. Inadequate technical competence and resistance to change can further impede integration. According to Bakhadirov et al. (2024), educators' acceptance of AI depends on factors such as perceived ease of use, usefulness, institutional support, and self-efficacy. Therefore, understanding lecturers' attitudes, experiences, and challenges is vital to developing effective strategies for AI adoption in assessment.

The significance of studying Artificial Intelligence in computer science assessment implementation among College of Education lecturers in Nasarawa State lies in the need to modernize teaching and evaluation practices. By leveraging AI, lecturers

can achieve more reliable, transparent, and data-driven assessment outcomes. Furthermore, the findings of this study could inform institutional policies, guide curriculum development and promote capacity-building programmes that enhance lecturers' digital competencies. The study also contributes to existing literature on educational technology integration, particularly within the Nigerian teacher education context, where empirical research on AI in assessment remains limited.

Artificial Intelligence presents a transformative opportunity to reshape assessment implementation in computer science education. It has the potential to improve grading accuracy, facilitate adaptive testing, detect plagiarism, and provide personalized feedback, thereby enhancing both teaching effectiveness and student learning. However, realizing these benefits requires addressing barriers such as inadequate infrastructure, limited digital skills, ethical concerns, and insufficient institutional support. Understanding the current state of AI adoption among lecturers in Nasarawa State Colleges of Education is, therefore, essential to designing evidence-based strategies for sustainable integration.

Furthermore, Assessment remains a cornerstone of teaching and learning in tertiary education, serving as a critical mechanism for evaluating students' knowledge, skills, and competencies. In computer science education, assessment implementation is particularly important because it tests not only students' theoretical understanding but also their practical ability to solve computational problems, develop algorithms, and design software systems. However, in many Nigerian Colleges of Education, the process of assessment implementation remains largely traditional, manual, and subjective (Egiri et al., 2025).

Lecturers often rely on paper-based tests, oral examinations, and manual grading, which are time-consuming, prone to human error, and limited in providing timely feedback to students. As a result, assessment outcomes sometimes fail to reflect the true abilities and learning progress of students. With the growing advancement of Artificial Intelligence (AI), the potential exists to address many of these challenges by automating and improving the reliability, accuracy, and fairness of assessment systems. AI-based tools can assist lecturers in grading, analyzing student performance, detecting plagiarism, and providing adaptive feedback tailored to individual learning needs (Manorat et al., 2025). These innovations can significantly enhance teaching efficiency and ensure that assessment outcomes are more objective and data-driven. However, despite the global trend toward the adoption of AI in educational assessment, many tertiary institutions in developing countries, including those in Nasarawa State, are yet to fully explore or adopt these technologies for instructional purposes (Owan et al., 2023).

The Colleges of Education in Nasarawa State, such as those in Akwanga, Agyaragu, Lafia, and Karu, are mandated to prepare teachers for the nation's basic and secondary school system. Computer science lecturers in these institutions face increasing pressure to integrate modern technologies into their teaching and assessment practices. This situation hampers the effective assessment of programming skills, algorithm design, and software development, core components of computer science education that require advanced evaluation systems.

Furthermore, the assessment of computer science students presents unique challenges compared to other disciplines. Evaluating programming assignments, for example, requires an understanding of logic, code structure, and execution flow. Manual grading of such work is not only tedious but also susceptible to inconsistency and bias. AI-powered tools, such as automatic code graders and machine learning-based evaluators, have been developed to perform these tasks efficiently and objectively (Owan et al., 2023). However, the awareness and utilization of these tools among College of Education lecturers in Nasarawa State appear to be low. Many lecturers lack adequate exposure or training in the use of AI for educational assessment, thereby limiting the potential benefits that such tools could bring to the teaching and learning process.

Another critical problem is the lack of institutional and policy frameworks to support the adoption of AI technologies in Nigerian Colleges of Education. Although the National Policy on Information and Communication Technology in Education (Federal Ministry of Education, 2020) encourages the integration of digital technologies in teaching and learning, the policy has not been effectively implemented at the institutional level, particularly in teacher-training institutions. Consequently, lecturers operate in environments characterized by poor internet connectivity, inadequate computer laboratories, limited software resources, and a lack of structured professional development programs. These infrastructural and policy gaps create barriers that hinder lecturers' readiness to integrate AI into their assessment practices.

Ethical and data privacy concerns also contribute to the problem. The use of AI in assessment involves the collection and processing of large volumes of student data. Without clear guidelines on data protection and algorithmic transparency, lecturers and institutions may be reluctant to use AI tools, fearing potential misuse of sensitive information (Suleiman et al., 2025). Moreover, biases embedded in AI algorithms can lead to unfair assessment outcomes if not properly managed. This raises questions about the fairness, accountability, and reliability of AI-driven assessment systems in the Nigerian context, where regulation and oversight are still evolving.

The attitude and perception of lecturers also constitute a major aspect of the problem. Some lecturers perceive AI as a complex and intimidating technology that may replace human roles in education. Others may resist adoption due to a lack of confidence or fear of technological obsolescence (Murimo Bethel Mutanga et al., 2024). This resistance can limit institutional efforts toward digital transformation and impede the integration of AI into assessment implementation. Understanding lecturers' attitudes, experiences, and perceived barriers is, therefore, essential for designing effective interventions and capacity-building initiatives that promote acceptance and usage of AI tools in assessment.

Given these challenges, there is a growing concern that the potential of AI to improve the quality, objectivity, and timeliness of computer science assessment remains underutilized among College of Education lecturers in Nasarawa State. The absence of empirical data on how lecturers currently implement AI in their assessment practices, their level of awareness, and the institutional support available further deepens the knowledge gap in this area. Without such data, policymakers and educational

administrators may find it difficult to design effective strategies for integrating AI into teaching and assessment at the tertiary education level.

It is against this background that the study seeks to investigate Artificial Intelligence in computer science assessment implementation among College of Education lecturers in Nasarawa State. The study is motivated by the need to understand how AI can enhance the reliability and efficiency of assessment processes, identify the challenges that hinder its adoption and evaluate the extent of institutional readiness to support AI-driven innovations. The findings of this research are expected to provide valuable insights for policymakers, administrators and lecturers, leading to improved teaching quality, student learning outcomes, and sustainable digital transformation in Nigeria's teacher education system.

Research Questions

Based on the objectives, the following research questions are formulated to guide the study:

1. What is the level of lecturers' awareness and adoption of Artificial Intelligence tools for computer science assessment in Nasarawa State tertiary institutions?
2. How effective is Artificial Intelligence in improving the accuracy, fairness, and efficiency of computer science assessment among College of Education lecturers?
3. What challenges do lecturers face in implementing Artificial Intelligence tools for assessment in computer science education?
4. What is the level of lecturers' use of AI for assessment implementation based on gender?

Hypotheses:

The following hypotheses were tested in the study

H₀₁: There is no significant relationship between lecturers' awareness of Artificial Intelligence tools and their implementation of computer science assessment.

H₀₂: There is no significant difference between male and female lecturers in their use of AI for computer science assessment implementation.

Methodology

The study employed both descriptive survey and correlational research designs. The entire population of 37 Computer Science lecturers across the three Colleges of Education in Nasarawa State was utilized, given its manageable size. This approach aligns with Nworgu (2006), who asserted that when the population is relatively small, it is appropriate to include the entire population in the study. A 4 point ranting scale Questionnaire on Implementation Questionnaire (RAICSIQ) was used for data collection. The instrument was designed based on a 4-point rating scale given as follows: Strongly Agree (SA=4), Agree (A=3), Disagree (D=2), and Strongly Disagree (SD=1). The Cronbach's alpha coefficient was 0.86. Means and standard Deviations were used to answer research

questions, while Pearson's Product-Moment Correlation statistics was used to estimate formulated hypotheses at a 0.05 level of significance.

Results

Research Question One

What is the level of awareness of Artificial Intelligence tools among computer science lecturers in Colleges of Education in Nasarawa State?

Table 1: Mean and Standard Deviations of Lecturers' Awareness of AI Tools

S/N	Items on AI Awareness	Median	Remark
1	I am aware of the use of AI tools such as ChatGPT, Gradescope, or CodeGrade for assessment.	3.48	High
2	I understand the concept of Artificial Intelligence in educational assessment.	3.38	High
3	I have attended training or workshops on AI in education.	2.5	Moderate
4	My institution encourages awareness of AI applications in teaching.	3.19	High
5	I can identify different AI systems used for automated grading and plagiarism detection.	3.28	High
Cluster Mean		3.17	High

The result shows that respondents demonstrated a high level of awareness of Artificial Intelligence tools in assessment activities, as indicated by the cluster mean of 3.17 on a 4-point scale. This implies that, on average, participants are knowledgeable about AI concepts and tools used in educational assessment, although participation in formal AI training programs was only moderate.

Research Question Two

To what extent do lecturers adopt Artificial Intelligence in computer science assessment implementation?

Table 2: Mean and Standard Deviations of the Extent of AI Adoption in Assessment

S/N	Items on AI Adoption	Median	Remark
1	I use AI tools to generate test questions and assignments.	3.38	High
2	I utilize AI software to grade students' programming projects.	3.24	High
3	I apply AI for plagiarism detection during students' submissions.	3.66	High
4	AI tools simplify my assessment tasks and save time.	3.78	High

- 5 I frequently use AI to provide personalized feedback to students. 3.22 High

Cluster Mean 3.46 High

The table shows that respondents exhibited a high level of adoption of Artificial Intelligence tools for assessment tasks, with a cluster mean of 3.46 on a 4-point scale. This indicates that lecturers actively employ AI technologies for generating questions, grading programming projects, detecting plagiarism, and providing feedback suggesting that AI has been effectively integrated into their assessment practices.

Research Question Three

What is the perceived effectiveness of AI in improving assessment practices among computer science lecturers?

Table 3: Mean and Standard Deviations of Perceived Effectiveness of AI in Assessment

S/N	Items on Perceived Effectiveness	Median	Remark
1	AI enhances objectivity and fairness in assessment.	3.53	Very High
2	AI provides timely grading and feedback to students.	3.59	Very High
3	AI improves accuracy and reduces human error in marking.	3.55	Very High
4	AI enables better tracking of students' learning progress.	3.46	High
5	AI increases student engagement and motivation.	3.34	High
Cluster Mean		3.49	Very High

The results show that respondents rated the perceived effectiveness of AI tools in educational assessment as very high, with a cluster mean of 3.49 on a 4-point scale. This indicates strong agreement that AI enhances objectivity, provides timely feedback, and improves assessment accuracy, though perceptions of AI's role in tracking progress and motivating students were slightly lower but still rated high overall.

Research Question Four

What are the major challenges facing the implementation of AI in computer science assessment among lecturers?

Table 4: Mean and Standard Deviations of Challenges of AI Implementation

S/N	Items on Challenges	Mean	Remark
1	Lack of adequate infrastructure and internet connectivity.	3.61	Major
2	Insufficient institutional support for AI tools.	3.48	Major
3	Lack of technical skills among lecturers.	3.33	Major
4	Ethical and data privacy concerns.	3.27	Major
5	High cost of acquiring and maintaining AI systems.	3.44	Major

Cluster Mean**3.43 Major**

The results indicate that respondents perceived the challenges affecting the adoption of AI tools as major, with a cluster mean of 3.43 on a 4-point scale. The most critical challenge identified was lack of adequate infrastructure and internet connectivity, followed by insufficient institutional support and high costs of AI systems. These findings suggest that structural, financial, and technical barriers remain significant constraints to the effective integration of AI in educational assessment and teaching practices.

Test of Hypotheses**Hypothesis One**

H₀₁: There is no significant relationship between lecturers' awareness of AI tools and the implementation of computer science assessment.

Table 5: Correlation Coefficient of the significance of lecturers' awareness of AI tools and the implementation of computer science assessment

Variable	N	df	r	Sig. (p)	Decision
Awareness of AI Tools & Assessment Implementation	37	35	0.63	0.001	Reject H ₀

Table 5 shows the correlation between lecturers' awareness of AI tools and the implementation of computer science assessment. The analysis of the results indicated that the p-value (0.001) is less than 0.05; the null hypothesis is rejected. This implies a significant positive relationship between lecturers' awareness of AI tools and the level of AI-based assessment implementation

Hypothesis Two

H₀₂: There is no significant relationship between gender and lecturers' adoption of AI for computer science assessment.

Table 6: Point Biserial Correlation Showing the Relationship between Gender and Lecturers' Adoption of AI for Computer Science Assessment

Variable	N	Mean	SD	r	Sig. (p)	Decision
Gender (Male = 1, Female = 0)	37			0.12	0.47	Retain H ₀
AI Adoption Score	37	3.95	0.69			

Table 6 presents the result of the point biserial correlation analysis examining the relationship between gender and lecturers' adoption of Artificial Intelligence (AI) for computer science assessment. The computed correlation coefficient ($r = 0.12$) with a corresponding **p-value of 0.47** is greater than the 0.05 level of significance. This result implies that there is **no statistically significant relationship between gender and AI adoption levels** among computer science lecturers.

Discussion of Findings

The findings of this study provide valuable insights into how lecturers in Colleges of Education are engaging with Artificial Intelligence (AI) tools for computer science assessment. The discussion below presents an interpretation of the results across the key variables investigated: awareness, adoption, perceived effectiveness, challenges, and the tested hypotheses.

The results from Table 1 showed that lecturers demonstrated a high level of awareness of AI tools, with a cluster mean of 3.17 on a 4-point scale. Respondents were familiar with widely used AI applications such as ChatGPT, GradeScope, and CodeGrade, as well as other digital assessment systems. This high level of awareness reflects the growing exposure of lecturers to emerging educational technologies, likely influenced by online learning environments, professional training, and academic collaborations.

This finding indicates that lecturers are increasingly aware of AI's role in transforming assessment practices, particularly its capacity to enhance fairness, consistency, and data-driven evaluation. It supports the report by Eke and Eze (2022), who found that teacher educators in Nigeria are becoming more informed about AI applications and are beginning to explore their use in educational evaluation. Similarly, Olayemi and Ibrahim (2023) observed that lecturers' AI literacy strongly influences their intention to integrate such tools into their teaching practice.

The implication of this finding is clear: awareness is a critical driver of technology utilization. Consistent with Davis' (1989) Technology Acceptance Model (TAM), awareness influences both perceived usefulness and ease of use of two essential determinants of technology adoption. Institutions, therefore, should continue promoting AI awareness through targeted seminars, hands-on training, and professional development programs to strengthen this foundation.

As shown in Table 2, the study found a high level of adoption of AI tools in computer science assessment, with a cluster mean of 3.46. This suggests that many lecturers are already applying AI tools for activities such as automated grading, plagiarism detection, and personalized feedback generation. This finding echoes Afolabi (2022), who observed that lecturers in Colleges of Education are increasingly incorporating AI-driven tools to improve assessment accuracy and efficiency. Similarly, Nwosu and Musa (2023) reported that AI-based grading systems enhance lecturers' productivity and reliability in evaluating students' work.

However, despite the generally high level of adoption, it is not yet universal. Some lecturers remain hesitant, often due to infrastructural limitations or limited institutional encouragement. In line with the Unified Theory of Acceptance and Use of Technology (UTAUT), this suggests that facilitating conditions such as reliable infrastructure, clear policies, and ongoing technical support are crucial to sustaining adoption momentum.

The findings in Table 3 revealed that lecturers perceive AI tools as highly effective, with a cluster mean of 3.49 on a 4-point scale. Respondents agreed that AI enhances objectivity, improves grading accuracy, minimizes human bias, and ensures timely feedback to students. This finding aligns with Umeh and Bello (2022), who asserted that AI-based assessment systems improve feedback speed, reduce human error, and promote transparency in grading. It also supports Nwosu and Musa (2023), who found that AI

applications promote efficiency and accountability in assessment processes. The implication here is that lecturers clearly recognize the benefits of AI for improving learning outcomes and assessment integrity. As Davis (1989) explains in the Technology Acceptance Model, perceived usefulness is a key factor influencing users' acceptance of technology. The strong belief in AI's effectiveness among lecturers, therefore, suggests a positive outlook toward its continued and expanded integration in educational assessment.

Despite the positive findings on awareness and adoption, Table 4 revealed that lecturers face major challenges in implementing AI for assessment, with a cluster mean of 4.23. Prominent issues include poor infrastructure and internet connectivity (Mean = 3.61), limited institutional support (Mean = 3.48), and lack of technical skills (Mean = 3.33). Ethical and data privacy concerns (Mean = 3.27) and the high cost of AI tools (Mean = 3.44) were also identified as significant barriers. These results are consistent with Adeoye (2021) and Okon and Ajayi (2023), who found that inadequate infrastructure, insufficient funding, and a lack of technical expertise are key obstacles to digital technology integration in Nigerian tertiary institutions. Similarly, Adebayo (2022) highlighted the importance of ethical and data governance policies to protect users' privacy when adopting AI-based systems. These challenges point to the urgent need for greater institutional investment, sustained training, and supportive policy frameworks. Without these, AI adoption in education may remain uneven and unsustainable.

The first hypothesis tested the relationship between lecturers' awareness of AI tools and their implementation of computer science assessment. The correlation analysis ($r = 0.63$, $p = 0.001$) revealed a significant positive relationship, leading to the rejection of the null hypothesis. This means that lecturers who possess a higher awareness of AI tools are more likely to implement them in their assessment practices. This outcome reinforces the earlier descriptive findings and supports Eke and Eze (2022), who concluded that awareness and familiarity with AI tools predict their actual use among educators. It also aligns with Davis' (1989) Technology Acceptance Model, which posits that knowledge and perceived relevance drive technology adoption. Therefore, initiatives such as AI literacy campaigns, professional training and awareness programs are essential to further enhance implementation.

The second hypothesis examined the point biserial correlation between gender and lecturers' adoption of AI for computer science assessment. The analysis yielded a correlation coefficient ($r_{pb} = 0.12$) with a corresponding p-value of 0.47, which is greater than the 0.05 level of significance. This indicates that there is no significant relationship between gender and AI adoption levels among computer science lecturers. In other words, both male and female lecturers show similar tendencies in adopting AI tools for computer science assessment. Therefore, the null hypothesis (H_{02}) stating that there is no significant relationship between gender and AI adoption is retained. This finding agrees with Ogundele and Ojo (2021) and Afolabi (2022), who reported that gender differences in digital technology adoption among lecturers are diminishing as access and exposure increase. It is also consistent with the UTAUT framework, which suggests that when institutional support and resources are equitable, gender ceases to be a major factor in technology use. In essence, the study establishes that AI adoption among lecturers is

driven more by awareness, institutional support, and perceived usefulness than by demographic characteristics such as gender.

Conclusion and Recommendations

This study examined lecturers' awareness, adoption, and perceptions of Artificial Intelligence (AI) tools in computer science assessment across Colleges of Education. The findings reveal that lecturers are highly aware of AI applications such as ChatGPT, Gradescope, codeGrade, and many have begun integrating them into their assessment practices. This growing awareness and adoption reflect a positive shift toward digital transformation in higher education. Lecturers also expressed strong confidence in the effectiveness of AI tools, acknowledging their ability to enhance fairness, accuracy, and timeliness in assessment. However, challenges such as poor internet connectivity, limited institutional support, high costs, and data privacy concerns remain significant barriers to wider implementation.

The study further affirms a strong positive relationship between lecturers' awareness of AI tools and their level of implementation, confirming that increased familiarity drives adoption. Conversely, gender was found to have no significant influence on AI adoption, suggesting that access and institutional conditions play a more decisive role. The study concludes that while AI integration in assessment is gaining momentum, its sustainability depends on continued institutional investment, capacity building, ethical data governance, and supportive policies. Strengthening these areas will enable Nigerian Colleges of Education to fully harness AI's potential for improving the quality and fairness of computer science assessment.

Based on the findings, the following recommendations are made to enhance the effective adoption and utilization of Artificial Intelligence (AI) tools in computer science assessment across Colleges of Education in Nigeria:

1. Colleges of Education and other tertiary institutions should invest in reliable infrastructure, including high-speed internet, modern computers, and AI-compatible software, to support the seamless implementation of AI-based assessment systems.
2. Regular workshops, hands-on training, and professional development programs should be organized to improve lecturers' competence, confidence, and digital literacy in using AI tools for assessment, grading, and feedback.
3. The National Commission for Colleges of Education (NCCE) should formulate clear policy guidelines that promote and regulate the integration of AI in teaching, learning, and assessment, ensuring standardization across institutions.
4. Institutions should establish strong ethical frameworks and data governance policies to ensure the responsible use of AI. These should address issues of fairness, transparency, and protection of students' personal information.
5. Colleges should collaborate with technology firms, software developers, and educational innovators to design affordable and context-relevant AI tools that reflect the realities of Nigerian education.

6. Academic institutions and funding bodies should encourage further research into the pedagogical, ethical, and operational implications of AI in assessment to strengthen evidence-based decision-making and innovation.
7. Institutional leaders should develop monitoring and evaluation systems to periodically assess the performance, reliability, and fairness of AI assessment tools, ensuring continuous improvement and accountability.

References

- Abdul'aziz Inusa, B., Suleiman, A., & Ibrahim, A. (2025). Integrating Artificial Intelligence into Nigeria's National Policy on Education: A Strategic Framework for the 21 st Century. *International Journal of Research Publication and Reviews Journal* Homepage: [Www.ijrpr.com](http://www.ijrpr.com), 6, 5999–6006. <https://ijrpr.com/uploads/V6ISSUE7/IJRPR50799.pdf>
- Adebayo, O. M. (2022). *Ethical considerations and data privacy in educational artificial intelligence: A Nigerian perspective*. *African Journal of Educational Technology and Innovation*, 4(1), 45–58.
- Adeoye, T. O. (2021). *Infrastructural barriers to digital transformation in Nigerian tertiary institutions*. *Nigerian Journal of Educational Research and Evaluation*, 20(2), 112–126.
- Afolabi, J. O. (2022). *Emerging digital assessment practices among lecturers in Nigerian Colleges of Education*. *International Journal of Educational Technology and Assessment*, 9(3), 83–97.
- Bakhadirov, M., Alasgarova, R., & Rzayev, J. (2024). Factors Influencing Teachers' Use of Artificial Intelligence for Instructional Purposes. *IAFOR Journal of Education*, 12(2), 9–32. <https://doi.org/10.22492/ije.12.2.01>
- Cardona, M., Rodríguez, R., & Ishmael, K. (2023). *Artificial Intelligence and the Future of Teaching and Learning Insights and Recommendations*. Office of Educational Technology. <https://www.ed.gov/sites/ed/files/documents/ai-report/ai-report.pdf>
- Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology*. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Egiri, I. A., & Akong, A. A. (2025). Assessing Computer Science Teachers' Competence in Constructing Essay Test Items: A Comparative Study of Lower and Higher Order Thinking Skills in Junior Secondary Schools in Benue State. *International Journal of Emerging Research in Engineering Science and Management*, 4(2), 68–76. <https://doi.org/10.58482/ijeresm.v4i2.9>
- Eke, E. A., & Eze, C. N. (2022). *Awareness and utilization of artificial intelligence applications among teacher educators in Nigeria*. *Journal of Educational Innovation and Development*, 11(2), 102–118.
- Federal Ministry of Education. (2020). *National policy on information and communication technology in education*. Abuja: Government Press.
- Jayme, P. K. (2025). *Assessment of Learning 2 Module*. Scribd. <https://www.scribd.com/document/674564260/Assessment-of-Learning-2->

Module

- Johnson, A., Jacovina, M., Russell, D., & Soto, C. (2016). *Challenges and Solutions When Using Technologies in the Classroom*. <https://files.eric.ed.gov/fulltext/ED577147.pdf>
- Lim, T., Swapna Gottipati, & Cheong, M. (2025). What students really think: unpacking AI ethics in educational assessments through a triadic framework. *International Journal of Educational Technology in Higher Education*, 22(1). <https://doi.org/10.1186/s41239-025-00556-8>
- Manorat, P., Tuarob, S., & Pongpaichet, S. (2025). Artificial Intelligence in Computer Programming Education: A Systematic Literature Review. *Computers and Education: Artificial Intelligence*, 100403. <https://doi.org/10.1016/j.caeai.2025.100403>
- Murimo Bethel Mutanga, Vikash Jugoo, & Kuburat Oyeranti Adefemi. (2024). Lecturers' Perceptions on the Integration of Artificial Intelligence Tools into Teaching Practice. *Trends in Higher Education*, 3(4), 1121–1133. <https://doi.org/10.3390/higheredu3040066>
- Nwosu, C. C., & Musa, H. S. (2023). *Artificial intelligence-driven assessment and teacher effectiveness in Nigerian higher education*. *African Journal of Assessment and Evaluation*, 6(1), 23–38.
- Ogundele, J. O., & Ojo, A. F. (2021). *Digital tools adoption for assessment among lecturers in Nigerian universities: Trends and implications*. *Nigerian Journal of Educational Management*, 17(1), 64–80.
- Okon, U. I., & Ajayi, F. E. (2023). *Funding and infrastructural challenges of ICT integration in Nigerian teacher education*. *Journal of Educational Management and Policy Studies*, 15(1), 89–104.
- Olayemi, T. S., & Ibrahim, M. J. (2023). *Artificial intelligence literacy among lecturers in Colleges of Education in North-Central Nigeria*. *Contemporary Issues in Educational Technology*, 5(2), 55–71.
- Owan, V. J., Abang, K. B., Idika, D. O., Etta, E. O., & Bassey, B. A. (2023). Exploring the potential of artificial intelligence tools in educational measurement and assessment. *EURASIA Journal of Mathematics, Science and Technology Education*, 19(8), em2307–em2307. <https://doi.org/10.29333/ejmste/13428>
- Suleiman musa dangara, ibrahim toro audu, & isa, i. F. (2025). Enhancing e-learning in tertiary institutions in nigeria: a study of the college of education, akwanga, nasarawa state. *International journal of educational research and library science*. <https://doi.org/10.70382/tijerls.v09i8.048>
- Umeh, P. C., & Bello, M. O. (2022). *Artificial intelligence in student assessment: Implications for teaching and learning outcomes*. *International Journal of Educational Assessment*, 8(2), 71–85.
- UNESCO. (2019). *Artificial intelligence in education: challenges and opportunities for sustainable development*. Unesco.org. <https://unesdoc.unesco.org/ark:/48223/pf0000366994>
- Wang, S., Wang, F., Zhu, Z., Wang, J., Tran, T., & Du, Z. (2024). Artificial intelligence

in education: A systematic literature review. *Expert Systems with Applications*, 252, 124167. <https://doi.org/10.1016/j.eswa.2024.124167>

Wang, V. (2024). *Integrating AI Into Pedagogical Education*. Information Science Reference.