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Assessing Artificial Intelligence Knowledge, Skills, and Utilization for Psycho-Educational Development in Selected Private Universities in Ogun State, Nigeria

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Abstract

Artificial Intelligence (AI) has emerged as a strategic innovation with potential to enhance teaching effectiveness, student engagement, and psycho-educational development in higher education. Despite its growing relevance, empirical evidence on stakeholders' awareness, skills, and utilization of AI within Nigerian universities remains limited. This study investigated the level of awareness, skills, and application of AI for psycho-educational development among university stakeholders in Ogun State, Nigeria.

The study examined stakeholders' understanding of AI technologies, factors influencing adoption in teaching and learning, and the relationship between effective AI use and students' engagement, academic performance, and psycho-educational development. A descriptive survey research design was adopted. Data were collected using a researcher-designed instrument titled Knowledge, Skills and Uses of Artificial Intelligence for Psycho-Educational Development Questionnaire (KSUAPD). The sample comprised 200 respondents—lecturers, administrators, and undergraduate students—from Caleb University and South Western University, selected through systematic sampling. Data were analysed using descriptive statistics.

Findings revealed a relatively high level of general AI awareness, alongside gaps in practical skills and confidence. Resource availability, institutional support, and resistance to change significantly influenced AI adoption. Effective AI use was positively associated with students' engagement, academic performance, and psycho-educational development. The study concludes that although perceptions of AI are largely positive, limitations in skills, infrastructure, and institutional frameworks constrain effective utilization. It recommends strengthened AI literacy, curricular integration, and ethical governance to support responsible and sustainable AI integration in Nigerian universities.

Keywords: Artificial Intelligence (AI); Psycho-Educational Development; Higher Education; Student Engagement; Academic Performance; AI Integration; Nigerian Universities; Educational Technology.

INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) technologies has significantly transformed various sectors, with education being one of the most impactful areas. AI encompasses a broad spectrum of technologies that mimic human cognitive functions, including machine learning, natural language processing, and data analytics. In the context of higher education, particularly in Nigerian universities, the incorporation of AI tools can enhance teaching methodologies, improve

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student engagement, and foster psycho-educational development (Adebayo & Afolabi, 2021). As universities strive to adapt to the demands of a knowledge-based economy, understanding the role of AI in education has become increasingly critical.

The educational landscape in Nigeria faces numerous challenges, including inadequate infrastructure, limited access to quality resources, and a shortage of qualified educators. These challenges hinder effective teaching and learning processes, ultimately affecting student outcomes (Ogunleye et al., 2022). For instance, the high student-to-teacher ratio in many Nigerian universities often results in overcrowded classrooms where individual attention is scarce. This situation can lead to disengagement among students, decreased motivation, and poor academic performance. However, the potential of AI to address these issues is substantial. For example, AI-driven platforms can analyze vast amounts of educational data, enabling educators to identify learning gaps and tailor their instructional approaches to meet the diverse needs of students (Adeyemo & Afolabi, 2020). Such personalized learning experiences are essential in a country where traditional teaching methods may not sufficiently cater to the varied learning styles of students.

Moreover, AI technologies can play a crucial role in supporting the mental health and well-being of students. With rising concerns about mental health issues among university students, AI can provide accessible resources and virtual counselling services (Ojo & Adetunji, 2023). This integration not only promotes academic success but also contributes to the overall psycho-educational development of students by addressing emotional and psychological needs. Research indicates that students who receive adequate mental health support are more likely to perform better academically and engage actively in their educational experiences (Eze et al., 2021). For instance, AI chatbots can offer 24/7 support, allowing students to seek help at their convenience, which is particularly beneficial in a context where stigma around mental health may prevent students from seeking traditional counselling.

Despite the promising applications of AI in education, there remains a significant gap in the awareness and understanding of these technologies among educators and students in Ogun State. Many universities have yet to fully integrate AI into their curricula or leverage its capabilities effectively (Ogunjimi & Olusola, 2022). This lack of familiarity poses a barrier to the successful implementation of AI tools, limiting their potential benefits in enhancing educational practices. A study by Alabi and Olatunji (2023) highlights that educators who lack training in AI technologies are less likely to adopt these tools, which can lead to missed opportunities for improving student learning outcomes.

The assessment of knowledge and skills related to AI usage is crucial for fostering psycho-educational development. Understanding how university stakeholders—students, educators, and administrators—perceive and utilize AI technologies can provide valuable insights into the current state of AI adoption in higher education. The importance of evaluating the readiness of educational institutions to integrate AI, as this readiness directly influences the effectiveness of AI applications in promoting learning and development. Moreover, the successful integration of AI requires not only technological infrastructure but also a cultural shift within educational institutions that embraces innovation and continuous professional development.

In addition to the technical aspects, ethical considerations surrounding AI in education must also be addressed. Issues such as data privacy, algorithmic bias, and the digital divide are critical factors that can influence the effectiveness and fairness of AI applications in educational settings (Ogunleye & Adetunji, 2023). For instance, if AI systems are trained on biased data, they may perpetuate existing inequalities rather than alleviate them. Therefore, it is essential for universities to establish ethical guidelines and frameworks for the responsible use of AI technologies. The integration of AI in educational settings offers immense potential for enhancing psycho-educational development in universities. However, a comprehensive understanding of the existing knowledge, skills, and applications of AI is essential for its effective implementation.

STATEMENT OF THE PROBLEM

The transformative potential of Artificial Intelligence (AI) in higher education lies in its capacity to enable adaptive instruction, data-informed academic support, and enhanced psycho-educational services. Through learning analytics, intelligent tutoring systems, and predictive modelling, AI can strengthen instructional effectiveness and student wellbeing. However, despite these prospects, the integration of AI within Nigerian universities—particularly in Ogun State—remains limited and uneven. This situation raises substantive concerns regarding institutional preparedness, digital capacity, and the systemic alignment required to leverage AI for sustainable educational improvement.

A critical constraint to effective AI adoption is the inadequate level of knowledge, technical competence, and evaluative literacy among key stakeholders. Many educators, students, and administrators lack the requisite skills to integrate AI tools into pedagogical design, assessment practices, student engagement strategies, and psycho-educational interventions. Compounding this challenge are attitudinal resistance, ethical apprehensions relating to data privacy and academic integrity, and fears of professional displacement. These concerns are further intensified by weak policy frameworks, infrastructural deficits, and insufficient institutional investment, resulting in the persistence of conventional instructional models and the underutilization of innovative technologies.

Moreover, there is a notable scarcity of empirical evidence documenting stakeholders' AI knowledge, competencies, perceptions, and utilization patterns within universities in Ogun State. The absence of context-specific data constrains evidence-based planning, policy formulation, and capacity-building initiatives. Consequently, a systematic investigation into the awareness, skills, and applications of AI among university stakeholders is imperative to inform responsive institutional strategies and promote responsible, contextually grounded integration of AI for enhanced psycho-educational development in Nigerian higher education.

RESEARCH QUESTIONS

In this research, the following research questions was addressed:

1. What is the current level of awareness and understanding of Artificial Intelligence (AI) technologies among educators and students in universities in Ogun State?
2. What factors are associated with the adoption and integration of AI tools into teaching and learning practices in universities in Ogun State?
3. What relationship exists between the effective use of AI technologies and students' engagement, academic performance, and overall psycho-educational development in universities in Ogun State?

METHODOLOGY

This study adopted a descriptive survey research design. The population of the study consisted of lecturers, administrators, and undergraduate students in selected universities in Ogun State, Nigeria. The targeted population comprised academic staff, administrative staff, and students of Caleb University and South Western University. These groups were considered appropriate because they are key stakeholders in the teaching–learning process and institutional decision-making, and are therefore directly involved in the awareness, adoption, and use of Artificial Intelligence (AI) for psycho-educational development in Selected Private universities in Ogun State.

A systematic sampling technique was employed to select respondents from the two participating universities. The study comprised a total of 200 respondents, with 100 drawn from Caleb University and 100 from South Western University, thereby ensuring institutional balance and strengthening the representativeness of the sample within the defined study context.

With respect to gender distribution, 120 respondents (60.0%) were male, while 80 respondents (40.0%) were female, indicating a higher proportion of male participants in the study. In terms of academic level, the largest group of respondents comprised students in 200 Level, representing 30.0% (60

individuals). Students in 100 Level and 400 Level each accounted for 25.0% (50 individuals respectively), while those in 300 Level constituted 20.0% (40 individuals), representing the smallest proportion within the sample. This distribution ensured adequate coverage across different stages of undergraduate study, thereby enhancing the validity of inferences drawn from the data.

Data were collected using a researcher-designed questionnaire titled *Knowledge, Skills and Uses of Artificial Intelligence for Psycho-Educational Development Questionnaire* (KSUAPD). The instrument was structured into two sections. Section A elicited demographic information such as sex, age, marital status, religion, and years of experience, while Section B contained 20 items designed to obtain quantitative data on respondents' knowledge, skills, and use of AI for psycho-educational development in university settings.

The questionnaire was validated by experts to establish its face, content, and construct validity. To determine the reliability of the instrument, a pilot study was conducted using 40 undergraduate students drawn from Caleb University and South Western University. The internal consistency of the instrument was computed using the Cronbach Alpha method, which yielded a reliability coefficient of **0.76**. This coefficient exceeds the acceptable benchmark of 0.70, indicating that the instrument was reliable and suitable for the main study.

Data collected were analysed using descriptive statistics. Percentage analysis was used to summarize respondents' demographic characteristics, while mean and standard deviation were employed to answer the research questions and describe trends in the knowledge, skills, and use of AI for psycho-educational development in universities.

RESULTS AND DISCUSSION

Results

The data gathered from the research question is presented and described as follows:

Research Question 1: What is the current level of awareness and understanding of Artificial Intelligence (AI) technologies among educators and students in universities in Ogun State?

Table 1. Level of awareness and understanding of AI technologies among students.

S/N	Statement	SA	A	D	SD	Mean	S.D
1	I am aware of what artificial intelligence (AI) is and its basic concepts.	60.0 (30%)	100.0 (50%)	30.0 (15%)	10.0 (5%)	3.55	0.81
2	I understand how AI technologies can be applied in various fields of study.	50.0 (25%)	90.0 (45%)	40.0 (20%)	20.0 (10%)	3.45	0.76
3	I have learned about AI through my coursework or educational materials.	70.0 (35%)	80.0 (40%)	30.0 (15%)	20.0 (10%)	3.70	0.56
4	I feel confident in discussing AI technologies and their implications.	40.0 (20%)	60.0 (30%)	50.0 (25%)	50.0 (25%)	3.50	0.76
5	I actively seek out information about AI advancements and their relevance to my education.	80.0 (40%)	70.0 (35%)	30.0 (15%)	20.0 (10%)	3.70	0.56

The table provides a detailed summary of respondents' perceptions of their level of awareness and understanding of Artificial Intelligence (AI) technologies. Findings indicate that a large proportion of the respondents, 160 (80%), reported being aware of AI and its basic concepts, whereas 40 respondents (20%) indicated a lack of such awareness. In addition, 140 respondents (70%) stated that they understand how AI technologies can be applied across various fields of study, while 60 respondents (30%) reported limited or no familiarity with AI applications.

Furthermore, 150 respondents (75%) indicated that they had been exposed to AI through their coursework or other educational materials, in contrast to 50 respondents (25%) who reported no such exposure. Regarding confidence in engaging with AI-related issues,

an equal proportion of respondents—100 (50%)—reported feeling confident in discussing AI technologies and their implications, while the remaining 100 respondents (50%) expressed a lack of confidence or familiarity. Lastly, 150 respondents (75%) reported that they actively seek information on AI advancements and their relevance to education, whereas 50 respondents (25%) indicated that they do not seek or possess knowledge about the relevance of AI to their educational experiences.

Research Question 2: What factors are associated with the adoption and integration of AI tools into teaching and learning practices in universities in Ogun State.

Table 2. Factors that influence the adoption and integration of AI tools in educational practices.

S/N	Statement	SA	A	D	SD	Mean	S.D
6	Availability of resources (e.g., technology, training) affects the integration of AI in my institution.	70.0 (35%)	90.0 (45%)	30.0 (15%)	10.0 (5%)	3.55	0.81
7	Institutional support is crucial for the successful implementation of AI tools.	60.0 (30%)	100.0 (50%)	30.0 (15%)	10.0 (5%)	3.45	0.76
8	Resistance to change among educators hinders the adoption of AI technologies.	50.0 (25%)	80.0 (40%)	50.0 (25%)	20.0 (10%)	3.70	0.56
9	The curriculum needs to be updated to include AI-related content for effective integration.	40.0 (20%)	60.0 (30%)	60.0 (30%)	40.0 (20%)	3.50	0.76
10	Collaboration among educators is essential for sharing best practices in AI integration.	80.0 (40%)	80.0 (40%)	30.0 (15%)	10.0 (5%)	3.55	0.81

The factors influencing the adoption and integration of AI tools in educational practices were examined, as presented in Table 2. The results show that a substantial majority of respondents, 160 (80%), agreed that the availability of resources, such as technology and training, significantly affects the integration of AI within their institutions, while 40 respondents (20%) disagreed. Similarly, 160 respondents (80%) affirmed that institutional support is critical to the successful implementation of AI tools, compared to 40 respondents (20%) who expressed contrary views.

In addition, 130 respondents (65%) agreed that resistance to change among educators constitutes a major barrier to the adoption of AI technologies, whereas 70 respondents (35%) disagreed. Opinions were evenly split on the need for curriculum updates to incorporate AI-related content, with 100 respondents (50%) agreeing that such updates are necessary for effective integration and 100 respondents (50%) disagreeing. Finally, 160 respondents (80%) acknowledged that collaboration among educators is essential for sharing best practices and enhancing the effective integration of AI, while 40 respondents (20%) did not share this view.

Research Question 3: What relationship exists between the effective use of AI technologies and students' engagement, academic performance, and overall psycho-educational development in universities in Ogun State?

Table 3. Relationship between the effective use of AI technologies and student engagement, academic performance, and overall psycho-educational development.

S/N	Statement	SA	A	D	SD	Mean	S.D
11	AI technologies positively impact student engagement in learning activities.	90.0 (45%)	60.0 (30%)	30.0 (15%)	20.0 (10%)	3.75	0.55
12	The use of AI tools enhances my academic performance.	100.0 (50%)	70.0 (35%)	20.0 (10%)	10.0 (5%)	3.45	0.76
13	AI-based feedback systems improve student learning outcomes.	60.0 (30%)	80.0 (40%)	40.0 (20%)	20.0 (10%)	3.70	0.76
14	Students are more motivated to learn when AI technologies are used in the classroom.	80.0 (40%)	60.0 (30%)	40.0 (20%)	20.0 (10%)	3.65	0.67
15	AI contributes to better psycho-educational development among students.	70.0 (35%)	60.0 (30%)	50.0 (25%)	20.0 (10%)	3.70	0.56

The relationships between the effective use of AI technologies and student engagement, academic performance, and overall psycho-educational development are presented in Table 3. The findings indicate that a substantial proportion of respondents, 150 (75%), believed that AI technologies have a positive impact on student engagement in learning activities, while 50 respondents (25%) disagreed. Similarly, 170 respondents (85%) were of the view that the use of AI tools enhances academic performance, with only 30 respondents (15%) expressing disagreement.

In addition, 140 respondents (70%) agreed that AI-based feedback systems contribute to improved student learning outcomes, whereas 60 respondents (30%) did not share this view. The results further show that 140 respondents (70%) attested that the use of AI technologies in the classroom increases students' motivation to learn, compared to 60 respondents (30%) who disagreed. Lastly, 130 respondents (65%) agreed that AI contributes to improved psycho-educational development among students, while 70 respondents (35%) disagreed.

Overall, these findings suggest the existence of meaningful relationships between the effective use of AI technologies and students' engagement, academic performance, and psycho-educational development in university settings.

DISCUSSION

The findings of this study provide important insights into the awareness, adoption, and educational implications of Artificial Intelligence (AI) in university settings in Ogun State, Nigeria. The discussion is presented in line with the major themes of the study, namely awareness and understanding of AI technologies, factors influencing AI adoption, and the relationship between AI use and educational outcomes.

The results reveal that a majority of respondents (80%) are aware of AI and its basic concepts, indicating a relatively high level of general awareness among university stakeholders. However, the existence of a notable minority who lack familiarity with AI underscores a critical gap in AI literacy. This finding suggests that while AI is gaining visibility within the university environment, understanding remains uneven and may limit its effective application for learning and psycho-educational development. The generally high mean scores across awareness-related items further indicate a positive disposition toward AI, with many respondents actively seeking information on AI advancements and their educational relevance. This proactive engagement is encouraging and reflects a readiness among students and staff to embrace AI-driven innovations. Consistent with this finding, Baker et al. (2020) emphasized that AI literacy is fundamental to

fostering a culture of innovation and informed engagement with emerging technologies in educational contexts.

The study also identified key factors influencing the adoption and integration of AI in educational practices. A substantial proportion of respondents (80%) acknowledged that the availability of resources, including technological infrastructure and training opportunities, as well as institutional support, are critical determinants of successful AI implementation. This finding aligns with existing literature, which consistently highlights the role of adequate resources and supportive institutional policies in facilitating technology integration in education. Furthermore, resistance to change among educators emerged as a significant barrier, suggesting the need for structured professional development and change management strategies to address fears, misconceptions, and skill deficits related to AI adoption.

The divided opinion regarding curriculum updates to include AI-related content reflects an important tension within the academic community. While some respondents recognize the necessity of aligning curricula with emerging technological trends, others may be uncertain about the relevance or feasibility of such changes. This finding points to the need for deliberate curriculum review and reform processes that emphasize the pedagogical value of AI and its alignment with learning outcomes. Supporting this view, Ertmer and Ottenbreit-Leftwich (2020) reported that sustained institutional support and continuous professional development are critical drivers of educators' willingness and capacity to adopt new technologies.

The findings further demonstrate a strong positive relationship between the effective use of AI technologies and key educational outcomes. A large majority of respondents (85%) agreed that AI enhances academic performance, while substantial proportions also linked AI use to improved student engagement, motivation, and psycho-educational development. These results highlight the transformative potential of AI tools in creating adaptive and learner-centered environments that support deeper engagement and improved learning outcomes. Such findings are consistent with prior research indicating that AI-driven adaptive systems can enhance student motivation, retention, and performance.

However, the proportion of respondents who expressed reservations about the effectiveness of AI-based feedback systems suggests that the benefits of AI are not uniformly experienced. This disagreement may be attributed to challenges related to implementation quality, usability, or insufficient user training. As noted by Zawacki-Richter et al. (2019), the effectiveness of AI in education is highly dependent on thoughtful implementation and the capacity of users to engage meaningfully with AI tools.

The recommendations emerging from the study further reinforce the need for a systemic approach to AI integration in higher education. The strong emphasis on targeted training, policy development, collaboration with technology providers, and increased funding reflects stakeholders' recognition of both the opportunities and challenges associated with AI adoption. These findings suggest that sustainable AI integration requires not only technological investments but also supportive policy frameworks, continuous capacity building, and collaborative partnerships. In line with this, Luckin et al. (2021) argued that coherent policy direction and sustained funding are essential for leveraging AI to enhance educational quality and relevance.

Overall, the discussion underscores that while awareness and positive perceptions of AI are relatively high, addressing gaps in knowledge, resources, institutional support, and implementation practices is crucial for maximizing the psycho-educational benefits of AI in Selected Private universities in Nigeria

CONCLUSION AND RECOMMENDATIONS

Conclusion

In conclusion, this study establishes that while awareness and positive perceptions of Artificial Intelligence (AI) are relatively high among stakeholders in selected private universities in Ogun State, meaningful and sustainable integration remains contingent upon systemic readiness. The findings demonstrate that AI holds significant potential to enhance academic performance, student engagement, motivation, and psycho-educational development; however, disparities

in AI literacy, infrastructural capacity, institutional support, and implementation quality constrain optimal utilization. Resource availability, structured professional development, coherent policy frameworks, and curriculum alignment emerged as critical determinants of effective adoption, while resistance to change and uncertainty regarding pedagogical relevance underscore the need for strategic change management. Ultimately, the transformative promise of AI in higher education will be realized not merely through technological acquisition, but through evidence-informed planning, sustained capacity building, and institution-wide commitment to responsible and contextually grounded integration.

Recommendations

Based on the study's empirical findings and derived conclusions, the following recommendations are advanced for policy, practice, and future research, in line with the expectations of a reputable scholarly journal:

Educational institutions are strongly encouraged to design and implement structured AI literacy programmes for both students and educators, with the aim of addressing existing knowledge gaps and enhancing confidence in the informed use of AI technologies. In parallel, sustained and well-resourced professional development frameworks should be institutionalised to ensure that educators acquire the pedagogical, technical, and ethical competencies required for the effective integration of AI tools into teaching and learning processes.

At the curricular level, universities should undertake systematic reviews and revisions of existing programmes to embed AI-related knowledge and skills across disciplines, thereby better preparing graduates for participation in an increasingly technology-driven labour market. To support these efforts, institutions must establish comprehensive support mechanisms, including access to appropriate infrastructure, instructional resources, and ongoing technical assistance, to enable the successful and equitable adoption of AI technologies.

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