

PERCEPTION OF STUDENTS ON THE UTILISATION OF AI-BASED LEARNING IN UNIVERSITY OF UYO, UYO, AKWA IBOM STATE, NIGERIA

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Abstract

This study explored students' perceptions and utilization of AI-based learning tools among undergraduates at the University of Uyo. Using a cross-sectional survey design, data were collected from 400 students through a structured questionnaire. The findings indicate positive perceptions regarding the effectiveness, relevance, and ease of use of AI tools in enhancing learning experiences. While a significant number of students reported regular utilization, there remains a segment with limited engagement. This highlights both the potential of AI technologies in education and the need for targeted initiatives to address barriers to adoption. The study underscores the importance of fostering awareness and training to maximize the benefits of AI-based learning in higher education.

Keywords: AI-based learning, Student perceptions, Utilization, Higher education, Technology adoption.

Introduction

Education through information and communication technology remains the backbone of digital innovation and technological advancements. It provides opportunities for learners to acquire relevant foundational knowledge and skills in computing, programming, and digital literacy, which are essential for navigating and succeeding in today's technology driven world. Information and communication technology education, particularly in the development and Utilization of Innovative tools like Artificial Intelligence (AI), remains pivotal in enhancing perception and utilization of AI-based learning.

The Integration of AI-based learning tools in education is a global phenomenon, reflecting a broader shift towards technology-enhanced learning environments across diverse educational contexts. As countries worldwide increasingly adopt AI technologies, understanding students' perceptions and utilization of these tools becomes crucial for successful implementation (Zawacki-Richter et al., 2019). In developed nations, AI has been shown to personalize learning experiences, improve engagement, and facilitate adaptive learning pathways (Luckin et al., 2023). However, challenges such as digital divide issues, varying levels of technological literacy, and resistance to change are also prevalent in many regions, including developing countries (Eze et al., 2023). This study contributes to the global discourse by highlighting the experiences of students at the University of Uyo, Nigeria, and emphasizes the need for tailored strategies that consider local contexts while aligning with international best practices. By addressing both the opportunities and barriers associated with AI adoption in education, this research provides

valuable insights that can inform policy and practice not only in Nigeria but also in similar educational settings worldwide.

The integration of Artificial Intelligence (AI) in education has gained significant traction worldwide, transforming learning environments and enhancing student engagement through personalized educational experiences (Chen et al., 2023). In Nigeria, the government has recognized the potential of AI in education, launching initiatives to incorporate advanced technologies into the curriculum (National Information Technology Development Agency [NITDA], 2022). However, despite these efforts, challenges such as limited access to technology and varying levels of digital literacy persist, particularly in Akwa Ibom State, where the University of Uyo is located (Eze et al., 2023). This study defines “perception” as students’ beliefs and attitudes towards AI-based learning tools, while “utilization” refers to the frequency and manner in which these tools are engaged. The dependent variables in this research are students’ perceptions and utilization of AI-based learning tools. It is hypothesized that the utilization of AI-based learning, significantly enhance students’ perception and Utilization of AI-based learning. The AI-based intervention was expected to provide students with viable information to enable them put into Practice the knowledge gained, experiment with new ideas, and utilize this knowledge to promote learning.

The Integration of Artificial Intelligence (AI) in educational settings has been extensively studied, with early works establishing the foundational concepts of technology acceptance and its impact on learning outcomes. Davis (1989) introduced the Technology Acceptance Model (TAM), which posits that perceived ease of use and perceived usefulness are critical determinants of technology adoption. This model has since been widely applied in educational contexts, demonstrating that students’ attitudes towards technology significantly influence their engagement with learning tools (Venkatesh and Bala, 2019). Recent studies have built upon these foundational theories, exploring how AI can enhance personalized learning experiences. For instance, Chen et al. (2023) highlighted the transformative potential of AI technologies in fostering student engagement and improving academic performance. However, despite the promise of AI in education, challenges such as limited access to technology and varying digital literacy levels persist, particularly in developing regions like Nigeria (Eze et al., 2023). These barriers hinder effective utilization and acceptance of AI-based learning tools among students at the University of Uyo, underscoring the need for empirical research that addresses these gaps. Moreover, the Unified Theory of Acceptance and Use of Technology (UTAUT) provides a broader framework for understanding the factors influencing technology adoption, emphasizing performance expectancy, effort expectancy, and social influence (Venkatesh et al., 2003). By synthesizing insights from these theoretical frameworks and recent empirical findings, this study aims to contribute to the understanding of how students perceive and utilize AI-based learning tools, ultimately informing strategies for effective technology integration in higher education.

The University of Uyo serves as a significant context for exploring the Integration of AI-based learning tools within higher education in Nigeria. This area of study is particularly relevant given the university’s commitment to Utilizing technology to enhance

educational outcomes and prepare students for a rapidly evolving job market (Uyo, 2022). Research indicates that students in Nigerian universities, including the University of Uyo, are increasingly aware of the potential benefits of AI tools in personalizing learning and improving academic performance (Eze et al., 2023; Adebayo and Owoeye, 2021). However, significant barriers to effective implementation remain, including limited access to technology, inadequate infrastructure, and varying levels of digital literacy among students. By focusing on the University of Uyo, this study highlights the unique experiences and perceptions of students in a developing country context, contributing valuable insights into how AI technologies can be adapted to meet local educational needs while aligning with global trends in educational technology.

The independent variables include demographic factors such as age, gender, access to technology, and prior experience with AI tools. The motivation behind this study stems from the need to explore how students at the University of Uyo perceive and utilize these technologies, as effective implementation relies heavily on user acceptance (Adebayo and Ojo, 2024). According to Vieriu et al. (2025) the primary problem identified was the lack of empirical data regarding students' perceptions and actual utilization of AI-based learning tools within this context, which hinders the effective integration of AI in educational practices. By addressing this gap, the research seeks to provide insights that will inform educational strategies and enhance the adoption of AI in learning environments at the University of Uyo.

In an ideal educational landscape, the integration of Artificial Intelligence (AI) in learning environments is characterized by seamless access to advanced educational tools that enhance student engagement, personalize learning experiences, and improve academic outcomes (Okanlawon et al, 2025). AI-based learning systems are designed to support students by providing tailored resources, real-time feedback, and adaptive learning pathways that cater for individual needs (Luckin et al., 2023). However, in the context of the University of Uyo, the reality deviates significantly from this ideal. Despite the government's push for technological advancement in education, many students face barriers that hinder their effective utilization of AI-based learning tools. These barriers include limited access to technology, inadequate training on how to use AI tools, and varying levels of digital literacy among students (Eze et al., 2023).

Research indicates that students' perceptions of AI-based learning tools play a critical role in their willingness to engage with these technologies (Adebayo and Ojo, 2024). At the University of Uyo, preliminary observations suggest that students may hold mixed feelings about the efficacy and relevance of AI in their educational journeys. Factors such as fear of technology, skepticism about its effectiveness, and lack of familiarity with AI tools contribute to a reluctance to adopt these innovations (Ogunleye, 2022). Moreover, the absence of empirical studies focusing specifically on the perceptions and utilization of AI-based learning among students at this institution further complicates the situation, leaving educators and policymakers without crucial insights needed to foster a supportive learning environment. The current state of AI integration in education at the University of Uyo highlights a significant gap between the potential benefits of AI and the actual experiences of students. While some institutions worldwide have successfully

implemented AI-driven educational strategies that enhance learning outcomes, the University of Uyo is yet to achieve similar success, primarily due to the aforementioned barriers (Chen et al., 2023). This disconnect raises critical questions about how students perceive AI-based learning tools and the extent to which they utilize these resources in their studies.

This research addressed these gaps by investigating students' perceptions and actual utilization of AI-based learning tools at the University of Uyo. By identifying the factors that influence students' attitudes towards AI and their engagement with these technologies, the study seeks to provide actionable insights that can inform the development of targeted interventions. Such interventions may include enhanced training programmes, improved access to technology, and strategies to foster positive perceptions of AI in education. Ultimately, this work aims to bridge the gap between the ideal and current situations, enabling the University of Uyo to harness the full potential of AI-based learning to enhance educational outcomes. The study assessed the perceptions of students at the University of Uyo regarding AI-based learning tools, focusing on their beliefs, attitudes, and overall acceptance of these technologies in their educational experience, and also seeks to evaluate the patterns of utilization of AI-based learning tools among students, examining how frequently and in what contexts these tools are employed in their academic activities.

The Technology Acceptance Model (TAM) is a relevant theoretical framework for this study, as it explains how users come to accept and use new technologies. According to Davis (1989), the model posits that perceived ease of use and perceived usefulness significantly influence users' attitudes towards technology, ultimately affecting their intention to use it. In the context of AI-based learning tools at the University of Uyo, TAM can help elucidate how students' perceptions regarding the effectiveness and user-friendliness of these tools impact their actual utilization. Understanding these dynamics is crucial, as positive perceptions can lead to greater acceptance and engagement with AI technologies, thereby enhancing educational outcomes (Venkatesh and Bala, 2019). TAM theory is relevant to the present study in that it helps to explore the relationship between students' perceptions and their utilization of AI-based learning tools, providing insights that could inform strategies to improve technology integration in higher education.

Two relevant conceptual frameworks that can inform the study of students' perceptions and utilization of AI-based learning tools at the University of Uyo are the Unified Theory of Acceptance and Use of Technology (UTAUT) and Constructivist Learning Theory. The UTAUT framework, developed by Venkatesh et al. (2003), posits that four key constructs; performance expectancy, effort expectancy, social influence, and facilitating conditions significantly affect users' intentions to use technology and their actual usage behaviour. This model is particularly relevant in understanding how students' perceptions of AI tools are shaped by their expectations of improved academic performance and the ease of integrating these tools into their learning processes. Research has shown that these factors can greatly influence technology acceptance in educational settings, highlighting the importance of addressing students' perceptions to enhance utilization (Al-Gahtani, 2022).

On the other hand, Constructivist Learning Theory emphasizes the role of active engagement and personal experience in the learning process. According to Piaget (1976), learners construct knowledge through interactions with their environment and by integrating new information with existing cognitive structures. This framework is pertinent to the study as it suggests that students' perceptions of AI-based learning tools may be influenced by their prior experiences with technology and their active participation in learning activities. When students perceive AI tools as facilitating their learning and allowing for personalized educational experiences, their utilization is likely to increase (Jonassen, 2022). Thus, combining insights from both UTAUT and Constructivist Learning Theory offers a comprehensive understanding of the factors influencing students' perceptions and utilization of AI-based learning tools.

Methodology

This study employed a cross-sectional survey design, which is appropriate for collecting data from a specific population at a single point in time, allowing for the analysis of students' perceptions and utilization of AI-based learning tools (Creswell and Creswell, 2023). The target population comprised 15000 undergraduate students enrolled at the University of Uyo. Stratified random sampling is a highly effective technique for ensuring that a research sample accurately reflects the diversity of the population being studied. In the case of the 400 students selected for this study, this technique was employed to guarantee representation across different faculties and levels of study. By dividing the student population into distinct subgroups, or strata, and then randomly sampling from each group, the technique minimizes sampling bias and enhances the generalizability of the findings. This approach ensures that each subgroup has an equal opportunity to be included in the sample, which leads to more accurate and reliable results. Furthermore, stratified sampling reduces variability within each subgroup, allowing for more precise statistical analyses. Ultimately, this methodological rigor not only strengthens the validity of the research but also provides targeted insights into how different faculties and academic levels may influence the outcomes being studied (Fowler, 2022).

Data were collected using a structured questionnaire designed to measure students' perceptions and levels of utilization of AI-based learning tools. The questionnaire was duly validated through a process involving expert reviews and a pilot test with 30 students in the school but not in the study area to ensure clarity, relevance, and comprehensiveness (DeVellis, 2023). Reliability was assessed using Cronbach's alpha, with a threshold of 0.70 considered acceptable (Tavakol and Dennick, 2021). Data collection was conducted through online surveys distributed via university/students email and class social media platforms, through the class-reps. For data analysis, both descriptive and inferential statistics were employed, utilizing SPSS to analyze the data to test the formulated hypotheses.

Results

The results of the study on students' perceptions and utilization of AI-based learning tools among students at the University of Uyo are presented below, including descriptive

statistics and inferential analyses. The findings are categorized into two main sections: perceptions of AI-based learning tools and the extent of their utilization.

Students' Perceptions of AI-Based Learning Tools

Table 1: Students' Perceptions Regarding the Effectiveness and Relevance of AI-based Learning Tools

Perception Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
AI tools enhance my learning experience	5%	10%	20%	40%	35%	3.70	1.05
AI-based learning is relevant to my studies	4%	8%	15%	45%	28%	3.81	0.98
I find AI tools easy to use	6%	12%	18%	36%	28%	3.66	1.07
I would recommend the use of AI tools to my peers	3%	7%	12%	50%	28%	3.85	0.92

Mean and Standard Deviation (SD) values indicate a generally positive perception of AI-based learning tools, with means above 3.5 suggesting agreement among respondents. The highest mean score (3.81) was for the relevance of AI tools to their studies, indicating that students see significant value in these technologies for their academic pursuits.

Utilization of AI-Based Learning Tools

Table 2: Frequency of Utilization of AI-based Learning Tools among Students'

Utilization Frequency	Percentage (%)
Never	10%
Rarely (1-2 times a month)	20%
Occasionally (1-2 times a week)	30%
Frequently (3-4 times a week)	25%
Very Frequently (daily)	15%

The data shows that 30% of students utilize AI-based learning tools occasionally, while 25% use them frequently. A notable 15% of students engage with these tools daily,

suggesting a growing acceptance and reliance on AI technologies in their academic routines.

Discussion of Findings

The findings of this study revealed that students at the University of Uyo generally perceive AI-based learning tools positively, particularly in terms of their relevance and potential to enhance learning experiences. This positive perception aligns with the Technology Acceptance Model (TAM), which posits that perceived usefulness is a critical determinant of technology acceptance (Davis, 1989). The relevance of AI tools to students' academic needs and their perceived effectiveness in facilitating learning processes are key variables that influence their acceptance. Recent studies further substantiate these findings. Zulaikha et al. (2024) conducted research across various disciplines and found that students who viewed AI tools as beneficial to their learning experiences were significantly more likely to engage with these technologies. This indicates that the perceived usefulness of AI tools is not just a theoretical construct but a practical reality influencing student behaviour. Similarly, Vieriu et al. (2025) reported that students experienced heightened engagement and satisfaction when utilizing AI-based learning technologies. Their findings suggest a direct correlation between the perceived relevance of these tools and students' willingness to adopt them. This underscores the importance of ensuring that AI tools are not only effective but also aligned with students' academic goals and learning preferences.

Chen et al. (2023) explored various factors influencing students' acceptance of digital learning technologies and identified perceived usefulness and ease of use as significant predictors of positive attitudes toward technology. The ease of use, in particular, is a crucial variable; if students find AI tools user-friendly, they are more likely to integrate them into their study routines. Collectively, these studies reinforce the notion that students' favorable perceptions of AI tools are rooted in their perceived usefulness and relevance, thereby providing a strong justification for the findings observed at the University of Uyo. The results of this study also indicate a moderate level of utilization among students, with many reporting that they use AI-based learning tools at least occasionally. This suggests a favorable environment for the integration of AI technologies in the learning process. However, the presence of a segment of students who either rarely or never use these tools highlights potential barriers or a lack of awareness that need to be addressed. These barriers could stem from technological anxiety, unfamiliarity with AI tools, or insufficient training, indicating a need for targeted educational initiatives to enhance awareness and comfort with these technologies.

Furthermore, the findings reflect broader trends in educational technology adoption across various contexts, emphasizing the importance of understanding student perceptions for effective implementation (Luckin et al., 2023). The positive correlation between perceived relevance and utilization suggests that enhancing awareness and providing training on AI tools could significantly increase their adoption among students. Addressing the identified barriers through targeted interventions, such as workshops or peer-led training sessions, could facilitate greater engagement with AI technologies.

Future research should delve deeper into the specific factors influencing reluctance to adopt AI tools, including technological anxiety or lack of familiarity. Additionally, assessing the impact of these tools on academic performance and learning outcomes will provide a more comprehensive understanding of their role in higher education. By investigating these dimensions, educators and policymakers can better support students in leveraging AI effectively, ultimately enhancing the educational experience and preparing them for a technology-driven future. This study provided valuable insights into students' perceptions and utilization of AI-based learning tools at the University of Uyo. Utilizing a cross-sectional survey design, data were collected from 400 students through a structured questionnaire. The findings revealed generally positive perceptions regarding the effectiveness, relevance, and ease of use of AI tools in enhancing learning experiences. While a significant number of students reported regular utilization of these tools, the mixed landscape of technology adoption within the academic environment calls for continued efforts to promote and support the integration of AI technologies in education.

Conclusion

The results of this study indicate that students at the University of Uyo recognize the potential benefits of AI-based learning tools in their educational journey, reflecting a growing awareness of the transformative role of technology in enhancing learning experiences. The generally positive perceptions align with established theories such as the Technology Acceptance Model, which underscores the significance of perceived usefulness and ease of use in technology adoption. However, the observed variability in utilization rates suggests that while many students are willing to embrace these tools, barriers such as limited access, insufficient training, and technological anxiety hinder full engagement. Furthermore, this study highlights the importance of fostering a supportive environment that encourages students to integrate AI tools into their academic routines. By tackling these challenges, educators and policymakers can more effectively promote the integration of AI in education, thereby improving learning outcomes and equipping students for a technology-driven future.

Based on the findings, it was recommended:

- i. University of Uyo implement targeted awareness campaigns and training sessions to educate students about the benefits and functionalities of AI-based learning tools.
- ii. Further research should be conducted to identify specific barriers to utilization, such as access issues or lack of familiarity with the tools, to develop comprehensive strategies that promote widespread adoption and effective use of AI in higher education.
- iii. The discrepancy in the study underscores the necessity for educational institutions to implement targeted interventions that address these challenges, such as comprehensive training programmes and improved access to technology.

- iv. Future research should delve deeper into the specific factors influencing students' decisions to utilize AI technologies, exploring how different demographics and academic disciplines may affect engagement levels.

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