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Assessing the Impact of Artificial Intelligence on Students Living with Disabilities in Federal University Wukari Taraba State, Nigeria

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Abstract

This study examined the awareness, availability, accessibility, and utilization of AI-driven assistive technologies for supporting students with disabilities at the Federal University Wukari (FUW). Guided by specific research questions, data analysis revealed that students demonstrate moderate awareness of AI-driven assistive technologies and their role in supporting learning activities, with mean ratings of (2.7%) for awareness and (2.5%) for availability. These findings suggest that many students perceive AI as having a meaningful impact on academic engagement and accessibility, aligning with Lyles (2024), who reported similar perceptions regarding AI's influence on academic performance. Results further indicate that physical facilities supporting AI-driven technologies such as lecture halls, libraries, and computer laboratories are moderately accessible, with mean scores of (2.7%) and (2.5%) respectively. However, this level of accessibility suggests that many students with disabilities are not yet fully exposed to or benefiting optimally from AI applications, corroborating the findings of Olawade et al. (2025). Regarding availability, respondents acknowledged the presence of AI-driven assistive tools capable of meeting diverse disability needs (2.7%), though overall adequacy remained moderate (2.5%), implying that existing technologies are helpful but not sufficiently optimized to address all students' needs, consistent with reports from the Journal of Special Education Technology (2025). Additionally, findings on utilization revealed that teaching staff moderately employ AI-driven assistive technologies in instructional delivery (2.7%), and students strongly recognize their importance in supporting learning activities (2.5%). Overall, the study underscores the crucial role of AI in enhancing learning experiences, independence, and academic participation for students with disabilities, while highlighting the need for improved optimization, exposure, and institutional support to maximize its inclusive potential at FUW.

Keywords: *Artificial Intelligence, Disability Inclusion, Assistive Technologies, Higher Education, Accessibility, Federal University Wukari.*

INTRODUCTION

The global education sector is experiencing a significant transformation driven by the rapid integration of Artificial Intelligence (AI). While this technological shift presents both opportunities and challenges for all learners irrespective of your condition, its implications are particularly profound for students living with disabilities. At the Federal University Wukari (FUW) in Nigeria, the ongoing digital transition offers a critical opportunity to re-envision inclusivity, accessibility, and equity in teaching and learning. Assessing the impact of AI on students with disabilities at FUW is therefore not merely an academic exercise; it is an urgent inquiry into how emerging technologies can be strategically leveraged to dismantle long-standing educational barriers within the context of a Sub-Saharan African university. Such an assessment requires a balanced perspective that recognizes AI's capacity to enable personalized and adaptive learning while

critically engaging with the infrastructural, economic, and ethical realities that shape its implementation.

The higher education context in Nigeria, and at FUW in particular, adds important layers of complexity to this discourse. Students with disabilities frequently confront multiple, intersecting challenges, including inadequate physical infrastructure, limited access to specialized learning materials, insufficient availability of assistive technologies, and, in some cases, persistent attitudinal barriers. Within this environment, AI should not be viewed as a distant or luxury innovation, but rather as a potentially transformative toolkit capable of bridging critical accessibility gaps. Institutional engagement with this potential is evident in initiatives such as FUW's September 2023 webinar, which explored the use of AI for lecture transcription and recording an application with direct benefits for students with hearing and learning disabilities. This initiative reflects a growing institutional awareness that AI-driven tools, including real-time speech-to-text captioning, text-to-speech applications, intelligent tutoring systems, and adaptive learning platforms, can significantly reshape the educational experience for students with diverse needs.

However, a meaningful assessment of AI's impact must extend beyond a mere inventory of technological possibilities. It demands a nuanced analysis structured around interconnected dimensions. First, it must examine the specific applications and immediate benefits of AI for different categories of disability visual, hearing, physical, and cognitive within FUW's academic and physical learning environments. Second, it must critically interrogate the substantial barriers to adoption, such as unstable electricity supply, limited internet connectivity, the high cost of digital devices and assistive technologies, inadequate localized content, and gaps in digital literacy among both students and academic staff. Third, the assessment must address key ethical and practical concerns, including data privacy and security, the risk of algorithmic bias that may further marginalize vulnerable groups, the potential for overreliance on technology, and the necessity of ensuring that AI complements rather than replaces essential human support and pedagogical interaction.

Ultimately, this assessment positions the integration of AI at Federal University Wukari as a crucial site of inquiry into how institutions can navigate both the promise and the perils of educational technologies. The central question is whether AI will function as a catalyst for greater inclusion or inadvertently reinforce existing inequalities. The answer depends on deliberate, context-sensitive strategies that prioritize the voices and needs of students with disabilities, invest in sustainable infrastructure and capacity building, and cultivate an educational ecosystem in which technology amplifies human potential. The sections that follow explore these dimensions in detail, providing a foundation for policies and practices aimed at ensuring that the AI-driven transformation of education is genuinely inclusive.

Statement of the Problem

The integration of Artificial Intelligence (AI) into higher education presents both significant opportunities and serious uncertainties for advancing inclusive learning, particularly for students with disabilities at the Federal University Wukari (FUW). Despite AI's potential to address persistent accessibility challenges such as limited access to learning materials, inadequate infrastructure, and insufficient academic support through tools like real-time transcription, adaptive learning systems, and assistive technologies, unregulated or poorly contextualized adoption risks reinforcing existing inequalities. The core problem lies in the absence of a comprehensive, evidence-based assessment of AI's socio-technical, ethical, and practical impacts within FUW's specific institutional and socio-economic context. AI systems often reflect algorithmic bias due to the underrepresentation of people with disabilities in their design, leading to tools that may fail to accommodate diverse needs, while infrastructural constraints such as unreliable electricity, limited internet access, and unequal access to devices further threaten equitable implementation. Additionally, FUW lacks a context-specific ethical and pedagogical framework to guide AI use, raising concerns about data privacy, academic integrity, skill development, and overreliance on technology. Without structured policies, capacity building, and alignment with principles such as Universal Design for Learning, AI initiatives may unintentionally create new barriers and inefficiently allocate scarce resources. Consequently, a rigorous, context-aware investigation is essential to ensure that AI adoption at FUW genuinely promotes equity, inclusion, and educational effectiveness rather than reproducing or amplifying existing disparities.

Purpose of the Study

This study is an empirical investigation into assessing the impact of Artificial Intelligence (AI) on students living with disabilities at Federal University Wukari (FUW). This research aims at assessing it impact on students of AI on students living with disabilities within a federal university wukari and preferred solution to improve the situation

Research Questions

1. What is the level of awareness among the student living with disabilities in federal university wukari and patterns of AI-driven assistive technologies
2. What is the level of accessibility of physical facilities of AI-driven assistive technologies

among students with disabilities and teaching staff at Federal University Wukari?

3. What is level of availability of AI-driven assistive technologies among students with disabilities and teaching staff at Federal University
4. What is the level utilization of AI-driven assistive technologies among students with disabilities and teaching staff at Federal University

Hypotheses of the Study

H_{01}: There is no significant relationship between the level of awareness and usage patterns of AI-driven assistive among students living with disabilities at Federal University Wukari.

H_{02}: There is no significant relationship between the accessibility of physical facilities and their use among students with disabilities and teaching staff at Federal University Wukari.

H_{03}: There is no significant relationship between the availability of AI-driven assistive technologies and their use among students with disabilities and teaching staff at Federal University Wukari.

H_{04}: There is no significant difference in the level of utilization of AI-driven assistive technologies between students with disabilities and teaching staff at Federal University Wukari.

RESEARCH METHODOLOGY

This study adopts descriptive survey research design, which is appropriate for this investigating assessing the impact of artificial intelligence on the students living with disabilities at federal university wukari Taraba state Nigeria. Survey research allows for the collection of data from a large number of respondents including students and Academic staff of the University.

The population of this make up of Two hundred respondents among include students living with disabilities enrolled at federal university wukari as well as academic. According to the university registry (2024), there are approximately 130 students registered with various disabilities, from difference faculties and departments. In addition, approximately 70 academic staff who are directly engaged in teaching or managing disabilities.

Sampling frame by Krejcie and Morgan,1971 in (Ahmed, 2021) stated that, if the population is two hundred (200) at 95 confidence level the sample will be 132. This was used to determine sample size for the study. Inclusion criteria. The study focuses on the assessing the impact of artificial intelligence on the students living with disabilities at federal university wukari. The study selected respondents who are directly involved with use of the Artificial intelligence. Exclusion criteria. The students without disability, disable students outside the university, staff not directly affected.

The multiple stage sampling procedure with appropriate techniques were used. stage one University was cluster into thirteen faculties namely Faculty of Agric, Education, Basic medical Sciences and Health, Engineering, Humanities, Management, Law, pure Science, Applied Science, Bio-sciences, Faculty of Allied and Sciences, information systems Physical sciences and Social Sciences. Stage two Eight Faculties and two departments were randomly selected as follows; - Faculty of Agric, (Agric Economic and Animal Production) faculty of Education (P H.E and Library and information Science) Faculty of Engineering (Agricultural Engineering, Chemical Engineering). Faculty of Humanities (History and Diplomatic Studies and English and literary Studies) Faculty of Management Sciences (Banking and Finance and Business Administration) Faculty of law (Public law and international Law) Faculty of Pure sciences (Physics and Chemistry) Faculty of Basic Sciences (Physiotherapy and Human Anatomy) Therefore, sixteen Department were randomly selected namely (Agric Economic, Animal Production, P.H.E, Library and information Science ,Agricultural Engineering, Chemical Engineering, History and Diplomatic Studies, English and literary Studies ,Banking and Finance Business Administration, Public law, international Law, Physics, Chemistry Physiotherapy and Human Anatomy) finally in stage three the purposive sample was used to access the respondents. Moreover, the research and research assistant visited Sixteen department that were selected, any disable student and other staff who were connected and were found available were used. This process continued until the required sample size was obtained. Therefore. The reason for chosen purposive sampling techniques is that you collect information- reach cases directly from the person with disabilities (Journal of Special Education Technology Advance online publication, 2025). This technique is appropriate because it ensures that participants possess relevant experience on artificial intelligence (Olawade, et al., 2025). Enhancing qualitative research through virtual focus groups and artificial intelligence: A review. International Journal of Medical Informatics,

Instrument for data collection

Structured Questionnaire Title (AIAISLWD) designed to capture descriptive research survey design for Assessing the impact of artificial intelligence on student living with disabilities in federal university wukari Taraba State Nigeria. Modify four likert Scale ranging from question one using Moderately Aware, Somewhat Aware, slightly aware, not at all aware. Question two and three using Agreed, Strongly Agreed, Strongly Disagreed / Disagreed. Question

four Using Almost every time, sometime, Almost Never, never use.

Validity And Reliability of Instruments

To ensured proper validity, the instruments was reviewed by three experts in special education and Curriculum and Instructions. A pilot was study was conducted by using test-retest method with twenty (20) students and fifteen (15) staff members from kwararafa university wukari for clarity, relevance, and comprehensive of the questionnaire items. For reliability the questionnaire was undergo a Cronbach's Alpha test, with a target reliability coefficient of 0.70 or higher, indicating acceptable internal consistency (Glim & Gliem, 2003)

Data collection

Permission was obtained from the university management to access students and staff on the Assessing the impact of artificial intelligence of students living with disability at federal university wukari Taraba state Nigeria. Data collection was carried out over a period of four weeks by briefing research assistants fluent in English help in administered the questionnaire. The one hundred and thirty (130) was administered to selected participants. The complete questionnaire was retrieved on the ensure high return rate.

Data analysis

Data from questionnaire was analysed using descriptive statistics (percentage, mean scores, standard deviation) and inferential statistics including Pearson correlation and regression analysis.

Ethnical Consideration

Ethical guideline was strictly followed throughout the study participants were with consent form, and their anonymity and confidentiality were ensured. Participation was voluntary, and respondents have the right to withdraw at any time without penalty

RESULTS AND DISCUSSION

Research Question 1: Awareness of AI-Driven Assistive Technologies.

Table1; Mean scores of respondents on Awareness of Ai Driven Assistive Technologies.

S/N	MA	SMA	SLA	NA	%
I am aware of AI-driven assistive technologies available for students with disabilities at Federal University Wukari.	50	45	65	40	2.5%
2 I understand how AI-driven assistive technologies can support my learning activities.	55	40	25	80	2.7%
3 I regularly use AI-driven assistive technologies for academic purposes	40	60	75	25	2.4%
4 The university provides sufficient information on how to use AI-driven assistive technologies.	20	80	95	05	2.4%

Item 1. A high number of respondents on how AI-driven assistive technologies can support my learning activities. (2.7%) and while aware of AI-driven assistive technologies available for students with disabilities at Federal University Wukari with (2.5%), and regularly use AI-driven assistive technologies for academic purposes with (2.4%) and with (2.4%) University provides sufficient information on how to use AI-driven assistive technologies. This indicates that many students perceive AI as having a meaningful impact on their academic activities, particularly in supporting learning and accessibility, although some respondents remain unsure of its full relevance.

Research Question 2**:** Accessibility of Physical Facilities for AI-Driven Assistive Technologies Applied by ticking appropriate in the box to respond to statement

Table 2; Mean Scores of Accessibilities of physical facilities for AI driven Assistive. Technologies

S/N	A	SA	D	SD	%
I Physical facilities such as computer labs are accessible to students with disabilities.	50	45	65	40	2.5%
2 AI-driven assistive technologies are easy to access within lecture halls and libraries.	55	40	25	80	2.7%
3 The university environment supports the effective use of AI-driven assistive technologies	40	60	75	25	2.4%
4 Teaching staff can easily access facilities needed to support students using AI-driven technologies.	20	80	95	05	2.4%

Item 2. show a shown AI-driven assistive technologies are easy to access within lecture halls and libraries with (2.7%) and with (2.5%) of Physical facilities such as computer labs are accessible to students with disabilities. and with (2.4%) university environment supports the effective use of AI-driven assistive technologies strongly with (2.4%) teaching staff can easily access facilities needed to support students using AI-driven technologies. This suggests that while AI tools exist, many students with disabilities may not yet be Responses fully exposed to or benefiting from AI applications in the university, leading to uncertainty about its impact.

Research Question 3: Availability of AI-Driven Assistive Technologies.

Table3; Mean Scores of Availabilities of AI Driven Assistive Technologies

S/N	A	SA	D	SD	%
I AI-driven assistive technologies are adequately available for students with disabilities in the university	50	45	65	40	2.5%
2 There are enough AI-driven assistive tools to meet the needs of students with different disabilities	55	40	25	80	2.7%
3 Teaching staff have access to AI-driven assistive technologies to support inclusive teaching.	40	60	75	25	2.4%
4 The university regularly updates and maintains AI-driven assistive technologies	20	80	95	05	2.4%

Item 3. This item recorded enough AI-driven assistive tools to meet the needs of students with different disabilities (2.7%) and AI-driven assistive technologies are adequately available for students with disabilities in the university (2.5%) responses, with fewer responses from Teaching staff have access to AI-driven assistive technologies to support inclusive teaching (2.4%) and the university regularly updates and maintains AI-driven assistive technologies (2.4%) respectively. This implies that students recognize AI as helpful, especially in areas like assistive technologies, but may feel its application is still limited or not fully optimized for their needs.

Research Question 4; Utilization of Ai Driven Assistive Technologies.

Table 4: Mean Scores of utilization of AI-Driven Assistive Technologies

S/N	AT	SM	AN	N	%
I Utilization of AI-driven assistive technologies important in supporting learning activities of students with disabilities at the Federal University?	50	45	65	40	2.5%
Utilization of AI-driven assistive technologies by teaching staff in facilitating instruction for students with disabilities?	55	40	25	80	2.7%
3 Use of AI-driven assistive technologies important in improving academic participation of students with disabilities at the Federal University?	40	60	75	25	2.4%
4 Utilization of AI-driven assistive technologies in enhancing collaboration between teaching staff and students with disabilities	20	80	95	05	2.4%

Item 4 shows a Utilization of AI-driven assistive technologies by teaching staff in facilitating instruction for students with disabilities with (2.7%) and with (2.5%) of Utilization of AI-driven assistive technologies important in supporting learning activities of students with disabilities at the Federal University and with (2.4%) Use of AI-driven assistive technologies important in improving academic participation of students with disabilities at the Federal University and also with (2.4%) of Utilization of AI-driven assistive technologies in enhancing collaboration between teaching staff and students with disabilities This strongly indicates that most respondents believe AI plays.

DISCUSSION OF FINDINGS

The discussion of the major findings was carried out based on the research questions that guided the study. The findings from the data analysis show awareness of ai-driven assistive technologies support students learning activities with (2.7%) and AI-driven assistive technologies available for students with disabilities at Federal University Wukari with (2.5%). This indicates that many students perceive AI as having a meaningful impact on their academic activities, particularly in supporting learning and accessibility. Moreover, the findings support from previous study by Lyles, (2024, September 26). Has agreed that many students perceive AI as having a

meaningful impact on their academic performance. table Furthermore, the table shows Accessibility of Physical Facilities for AI-Driven Assistive Technologies are easy to access within lecture halls and libraries with (2.7%) also Physical facilities such as computer labs are accessible to students with disabilities with (2.5%). This suggests that while AI tools exist, many students with disabilities may not yet fully exposed to or benefiting from AI applications in the university, leading to uncertainty about its impact this concord with (Olawade, et al., 2025) who found out that many students living with disabilities are not yet fully exposed to or benefit from AI application.

However, table three show Availability of AI-Driven Assistive Technologies, that there are enough AI-driven assistive tools to meet the needs of students with different disabilities with (2.7%) and AI-driven assistive technologies are adequately available for students with disabilities in the university with (2.5%), this implies that students recognize AI as helpful, especially in areas like assistive technologies, but may feel its application is still limited or not fully optimized for their needs this findings was accepted by Journal of Special Education Technology. (2025) in their findings many students are not fully optimized for their needs. Additionally, table four show the utilization of AI-driven assistive technologies by teaching staff in facilitating instruction for students with disabilities with (2,7%) and to what extent is the utilization of AI-driven assistive technologies important in supporting learning activities of students with disabilities at the Federal University with (2.5%). This strongly indicates that most respondents believe AI plays a crucial role in improving learning experiences, independence, and academic participation for students living with disabilities this assertion agreed with Journal of Special Education Technology. (2025). in their findings believe AI plays a crucial role in improving academic performance.

CONCLUSION

The study concluded that Artificial Intelligence has a significant impact both on students and staff living with disabilities at Federal University Wukari. Most respondents rated AI as agreed, highlighting its role in enhancing learning accessibility and academic participation. However, disagreed responses suggest that more effort is needed in awareness creation and implementation. With proper investment, training, and policy support, AI can greatly improve inclusive education and overall academic success for students living with disabilities.

Recommendations

Therefore, based on the findings, the following recommendations were made:

1. Increased Awareness: Federal University Wukari should organize workshops and seminars to educate students and staff on available AI tools for students with disabilities.
2. Improved AI Technologies: The university should invest in assistive AI technologies such as screen readers, speech-to-text software, and adaptive learning systems.
3. Training for academic and non- teaching Staff: Lecturers should be trained on how to integrate AI tools into teaching to better support students with disabilities.
4. Policy: The university management should develop policies that promote inclusive education through the use of Artificial Intelligence.

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