ARTIFICIAL INTELLIGENCE AS A CATALYST FOR SOCIAL SCIENCE EDUCATION AND SUSTAINABLE NATIONAL DEVELOPMENT IN DEVELOPING COUNTRIES IN NIGERIA. A CASE STUDY OF FEDERAL COLLEGE OF EDUCATION (FCE), OBUDU.

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Abstract
This paper examines Artificial Intelligence as a catalyst for enhancing Social Science education in Nigeria, with a specific focus on the Federal College of Education (FCE), Obudu as a case study. To achieve this, three research questions and three hypotheses were poised. Adopting a descriptive survey for the study design, the study draws on interviews with lecturers and students, document analysis, and observation of AI-supported instructional practices within FCE Obudu. The population consists1,150 students and lectures of School of Arts and Social Sciences at FCE Obudu. Lecturers (Political Science, Economics, Christian Religious studies, History, Geography, and Social Studies) at FCE Obudu. From the above population, 291 respondents were sampled for the study using stratified random sampling technique. The sample size was determined using krejcie and Morgan formula for sample size. A purposive sampling technique is used to select ICT administrators and key institutional officers for interviews. Data are collected using three primary instruments: structured questionnaires administered to lecturers and students to measure AI usage, digital literacy, teaching effectiveness, and perceived developmental impact; semi-structured interview guides for ICT personnel and academic administrators; and document analysis of institutional ICT policies and curriculum frameworks. The questionnaire items are structured using a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. The findings indicate that AI-driven tools such as intelligent tutoring systems, adaptive learning platforms, data analytics applications, and generative AI technologies significantly enhance critical thinking, research capacity, curriculum delivery, and learner engagement in Social Science disciplines. Furthermore, AI integration supports evidence-based policy analysis, digital literacy, and problem-solving competencies essential for sustainable development in Nigeria. It concludes that AI adoption in Social Science education can strengthen human capital development and contribute meaningfully to Nigeria's sustainable national development agenda.

Keywords: Artificial Intelligence, Social Science Education, Sustainable Development, Nigeria, FCE Obudu, Educational Innovation.

Introduction

Artificial Intelligence (AI) has rapidly become a defining force in the twenty-first century, reshaping socioeconomic systems, governance mechanisms and educational practices worldwide. Since the conceptualization of intelligent machines by Alan Turing in the mid-twentieth century, AI has evolved from theoretical algorithms to pervasive tools that underpin decision-making processes across sectors. In recent scholarship, AI has been characterized as a transformative socio-technical phenomenon with the capacity to influence how knowledge is produced, disseminated and applied (Russell & Norvig, 2021). Notwithstanding significant advancements within STEM (Science, Technology, Engineering and Mathematics) disciplines, there is an emergent recognition that AI can also play a catalytic role in enhancing the quality and relevance of social science education, particularly in contexts grappling with structural constraints such as Nigeria.

In the Nigerian context, the integration of AI into educational systems is still at a nascent stage, yet offers immense potential for addressing persistent challenges. These include inadequate infrastructure, limited access to quality teaching resources, low levels of digital literacy among educators and learners, and a curricular orientation that has traditionally prioritize content acquisition over analytical and critical competencies. Scholars such as Roger Schank and Neil Selwyn (2018) argue that AI-powered educational environments can help extend pedagogical reach, personalize learning trajectories and support data-driven instructional decisions. In social science education, where inquiry, interpretation and contextual analysis are central, AI applications including intelligent tutoring systems, automated feedback mechanisms and data visualization platforms can enhance students' engagement with complex societal phenomena.

Sustainable national development in Nigeria depends significantly on the ability of educational systems to cultivate citizens who are analytically equipped to address societal challenges. This aligns with the broader imperatives of the United Nations Sustainable Development Goals (SDGs), particularly Goal 4 (Quality Education) and Goal 9 (Industry, Innovation and Infrastructure) (United Nations, 2015). The integration of AI in educational ecosystems has been argued to support these goals by fostering inclusivity, improving learning outcomes and strengthening institutional capacity for evidence-based governance (Luckin et al., 2016). Within social sciences, AI can facilitate the exploration of large-scale datasets, simulation of socio-political models and enhancement of collaborative knowledge construction processes critical for developing informed citizens, responsive institutions and sustainable communities.

A focused investigation into the nexus between AI, social science education and sustainable development is particularly timely in Nigeria's tertiary institutions, including colleges of education. Federal College of Education (FCE) Obudu, in Cross River State, represents a contextual setting where pedagogical innovation intersects with educational challenges endemic to many developing economies. At FCE Obudu, social science students face limitations related to access to learning resources, teacher-to-student ratios and practical exposure to real-world socio-economic data. Embedding AI tools within social science curricula, then, has the potential to enhance analytical thinking, improve research competencies and support informed engagement with local and national development issues.

Notwithstanding the promise of AI, its adoption in Nigerian educational spaces is constrained by infrastructural limitations, gaps in professional development and concerns surrounding ethical implementation. Scholars such as Cathy O'Neil (2016) and Virginia Eubanks (2018) caution that unregulated AI systems may reproduce or amplify existing inequalities if deployed without appropriate safeguards. These concerns are particularly salient in developing societies, where regulatory frameworks are still evolving and digital divides persist. Therefore, theoretical explorations and empirical investigations into AI applications must be situated within local realities, ensuring that ethical governance, equity and contextual relevance remain central to implementation strategies.

This study adopts FCE Obudu as a case context to examine how AI can function as a catalyst for enhancing social science education and for contributing to sustainable national development in Nigeria. By investigating the intersections of technology, pedagogy and societal transformation,

this research contributes to extant literature on educational innovation in developing countries and offers insights into policy frameworks, institutional capacities and pedagogical practices necessary to harness AI for inclusive and sustainable development.

Statement of the Problem

The rapid advancement of Artificial Intelligence (AI) technologies has significantly transformed educational systems across developed economies, reshaping pedagogical delivery, assessment mechanisms and knowledge production processes. However, in many developing countries, including Nigeria, the integration of AI into formal education particularly within the social sciences remains limited and uneven. While global discourse increasingly emphases AI as a driver of innovation, digital transformation and sustainable development, Nigerian tertiary institutions continue to grapple with structural challenges such as inadequate digital infrastructure, insufficient funding, limited technological expertise and pedagogical conservatism.

Social science education plays a pivotal role in shaping civic consciousness, public policy understanding, economic literacy and democratic participation. In the Nigerian context, these disciplines are central to addressing complex national challenges including governance deficits, socio-economic inequality, youth unemployment and regional insecurity. Despite this strategic importance, social science instruction in many colleges of education remains predominantly theoretical, examination-driven and minimally integrated with digital tools capable of fostering data analysis, policy simulation and critical inquiry. The absence of AI-enhanced pedagogical approaches therefore constrains the development of higher-order cognitive skills necessary for sustainable national transformation.

At the institutional level, the Federal College of Education, Obudu in Cross River State reflects broader systemic limitations confronting teacher education institutions in Nigeria. Although the college is mandated to prepare future educators who will influence subsequent generations, there is limited empirical evidence on the extent to which AI technologies are integrated into its social science curriculum. Furthermore, little is known about how AI adoption if present affects students' analytical competence, digital literacy and readiness to contribute meaningfully to sustainable national development.

The Nigerian government has articulated commitments towards digital transformation and innovation-driven growth; nevertheless, policy pronouncements have not consistently translated into structured AI integration within teacher education institutions. The digital divide between urban and semi-urban or rural institutions further compounds inequalities in access to emerging technologies. Without deliberate strategies to harness AI for pedagogical enhancement, there is a risk that social science graduates may lack the technological competence and analytical sophistication required in an increasingly data-driven global economy.

Moreover, sustainable national development demands an education system capable of producing informed, technologically competent and socially responsive citizens. If AI remains underutilized within social science education, Nigeria's capacity to leverage digital innovation for governance reform, economic diversification and social inclusion may be significantly undermined. The absence of context-specific research examining AI as a catalyst for social science education within colleges of education particularly in Cross River State creates a critical knowledge gap in both academic literature and policy formulation.

It is against this backdrop that this study seeks to investigate Artificial Intelligence as a catalyst for social science education and sustainable national development in Nigeria, using FCE Obudu as a case study. By interrogating the level of AI integration, its pedagogical implications and its developmental significance, the research aims to provide empirical evidence to inform institutional reforms, policy direction and sustainable educational innovation in Nigeria.

Purpose of the study

The purpose of the study is to examine Artificial Intelligence as a Catalyst for Enhancing

Social Science Education and Promoting Sustainable National Development in Nigeria, with specific reference to FCE Obudu, Cross River State. Specifically, the study sought to:

i. To assess the extent to which Artificial Intelligence tools are integrated into social science education at FCE Obudu.

ii. To determine the impact of AI-driven instructional strategies on students' critical thinking, analytical skills and digital literacy in social science disciplines.

iii. To evaluate the contribution of AI-enhanced social science education to sustainable national development indicators in Nigeria.

Research questions

i. To what extent does the integration of Artificial Intelligence tools enhance the quality of social science education at FCE Obudu?

ii. How does the use of Artificial Intelligence influence students' critical thinking, analytical competence and digital literacy in social science disciplines at FCE Obudu?

iii. How does AI-driven social science education promote the sustainable national development outcomes in Nigeria?

Research Hypotheses

In order to achieve the objectives of the study, the following hypotheses are tested at 0.5 level.

H_{01}: There is no significant relationship between the integration of Artificial Intelligence tools and the quality of social science education at FCE Obudu.

H_{02}: Artificial Intelligence-driven instructional strategies have no significant effect on students' critical thinking, analytical competence and digital literacy in social science disciplines at FCE Obudu.

H_{03}: AI-driven does not significantly promote the sustainable national development outcomes in Nigeria.

Literature Review

Artificial Intelligence (AI) has become a transformative force in education globally, especially in higher institutions where digital technologies increasingly shape teaching, learning, research, and institutional management. In developing countries such as Nigeria, AI is gradually being recognized as an innovative tool capable of improving Social Science Education through personalized learning, intelligent instructional delivery, critical reasoning development, and sustainable national development outcomes. In teacher-training institutions such as Federal College of Education, Obudu, AI has emerged as an important discourse in educational transformation, reflected in institutional conferences and research on AI and national development.

Artificial Intelligence Tools are Integrated into Social Science Education

The integration of Artificial Intelligence into Social Science Education has created new opportunities for teaching and learning through intelligent tutoring systems, virtual learning assistants, adaptive learning platforms, automated assessments, predictive analytics, educational chatbots, and digital content generation tools. These tools help lecturers and students to engage in more interactive, learner-centered, and technology-driven academic experiences. According to Holmes, Bialik, and Fadel (2019), AI in education supports adaptive teaching by customizing instruction according to students' learning pace, intellectual ability, and academic needs. They argued that AI systems improve knowledge delivery by making teaching more individualized and efficient.

Similarly, Kamalov, Calong, and Gurrib (2023) observed that AI has revolutionized education through personalized learning systems, automated grading, and intelligent tutoring

mechanisms that improve student engagement and academic performance. They maintained that institutions that embrace AI-driven education become more innovative and academically competitive. Mallik and Gangopadhyay (2023) further explained that AI tools have become essential in proactive and reactive educational engagement. According to them, AI assists in curriculum planning, instructional design, assessment, learning analytics, and student academic support systems. Their findings suggest that AI integration promotes effective teaching and better student learning outcomes.

Within the Nigerian educational context, Assimonye and Okoh (2024) examined the use of AI tools by lecturers in Nigerian Colleges of Education and found that AI improves instructional quality, content accessibility, communication, and academic interaction between lecturers and students. Their study concluded that AI tools such as intelligent writing assistants, virtual assistants, and digital research platforms significantly improve classroom teaching and learning experiences in tertiary institutions. At Federal College of Education, Obudu, the institutional emphasis on Artificial Intelligence is evident in its international academic conference themed "Artificial Intelligence, Education and National Development," which specifically includes Artificial Intelligence, Social Science Education and National Development as a sub-theme. This indicates growing institutional commitment toward AI integration in teacher education and Social Science disciplines.

Therefore, integrating AI tools into Social Science Education can significantly improve instructional efficiency, digital learning access, academic interaction, and learner autonomy among students in developing countries like Nigeria.

Artificial Intelligence-Driven Instructional Strategies on Students' Critical Thinking, Analytical Skills and Literacy in Social Science Discipline

Critical thinking, analytical reasoning, and literacy are central competencies in Social Science Education because they enable learners to interpret societal issues, evaluate evidence, solve problems, and make informed decisions. Artificial Intelligence-driven instructional strategies have increasingly been identified as effective means of strengthening these intellectual competencies. Luckin et al. (2016) argued that AI-based educational systems promote deeper learning by encouraging inquiry, problem-solving, reflective thinking, and evidence-based reasoning. According to them, AI can simulate complex social realities that help learners develop analytical and interpretive capacities.

Likewise, Latif et al. (2023) noted that advanced AI systems improve educational reasoning by supporting interactive questioning, feedback mechanisms, cognitive scaffolding, and real-time academic guidance. They emphasized that AI creates opportunities for learners to engage in critical reflection and independent academic inquiry. Kamalov et al. (2023) also found that AI-enhanced education strengthens students' analytical abilities, critical judgment, and digital literacy because learners interact with intelligent systems that demand evaluation, interpretation, and synthesis of information rather than rote memorization.

In Social Science disciplines such as Political Science, Economics, Geography, and Social Studies, AI can support students through: intelligent data analysis, simulation of policy scenarios, automated literature review support, digital research assistance, personalized feedback on assignments, virtual debate and discussion platforms. These AI-supported instructional strategies cultivate higher-order thinking skills needed for academic excellence and national leadership development. At Federal College of Education, Obudu, where Social Science programmes are designed to prepare learners for meaningful national development and leadership, integrating AI into instructional strategies can significantly strengthen students' analytical competence, digital literacy, and critical reasoning capacity required in modern governance and development processes

The Contribution of Artificial Intelligence-Enhanced Social Science Education to Sustainable National Development Outcomes in Nigeria

Sustainable national development refers to continuous social, economic, technological, political, and human capital advancement that improves citizens' quality of life without compromising future generations. Education remains one of the strongest drivers of sustainable national development, and Artificial Intelligence is increasingly becoming a catalyst in achieving educational sustainability. Vinuesa et al. (2019) argued that AI contributes positively to sustainable development by improving education quality, innovation, productivity, governance efficiency, and human resource development. Their study showed that AI can accelerate progress toward Sustainable Development Goals (SDGs), particularly in education, innovation, and institutional development.

Similarly, UNESCO (2021) emphasized that AI in education can help developing countries bridge educational inequality, improve access to quality instruction, enhance workforce readiness, and promote digital citizenship. In Nigeria, Ateb (2025) studied AI awareness and utilization in Federal College of Education, Obudu and found growing awareness and utilization of AI applications in educational management and administration. The study concluded that AI improves efficiency, communication systems, planning processes, and institutional productivity—key ingredients for educational and national development. AI-enhanced Social Science Education contributes to sustainable national development in Nigeria by: producing digitally literate graduates, improving civic reasoning and democratic participation, strengthening policy analysis capacity, encouraging innovation and entrepreneurship, promoting evidence-based governance, developing human capital for national transformation. For institutions such as Federal College of Education, Obudu, AI-driven Social Science Education can serve as a strategic pathway toward producing graduates capable of contributing meaningfully to governance, policy formulation, community development, and sustainable national growth

METHODOLOGY

This study employed descriptive survey research design. According to Nworgu (2015) descriptive survey design is a research method that involves collecting data from a sample of individuals through the use of questionnaires, interviews, or other instruments, with the purpose of comparing, describing, or explaining their opinions, attitude, behaviour or characteristic. The population consisted all lecturers and students within the School of Arts and Social Sciences (Political Science, Economics, Christian Religious studies, History, Geography, and Social Studies) at FCE Obudu. a sample of 291 students and lecturer drawn from the population of 1,150 students and lectures of School of Arts and Social Sciences at FCE Obudu. Lecturers represent the instructional and policy implementation perspective, while students represent beneficiaries of AI-driven pedagogical practices. Administrative ICT personnel are also included for qualitative insights into institutional capacity and infrastructure. A stratified random sampling technique is employed to ensure adequate representation of lecturers and students across Social Science departments. Stratification is based on department and academic level. A purposive sampling technique is used to select ICT administrators and key institutional officers for interviews due to their strategic knowledge of AI policies and infrastructure. The sample size was determined using krejcie and Morgan (1970) formula for sample size. Data are collected using three primary instruments: structured questionnaires administered to lecturers and students to measure AI usage, digital literacy, teaching effectiveness, and perceived developmental impact; semi-structured interview guides for ICT personnel and academic administrators; and document analysis of institutional ICT policies and curriculum frameworks. The questionnaire items are structured using a four-point Likert scale ranging from Strongly Agree to Strongly Disagree.

The instrument was validated (face validity) and ensured through expert review by scholars in Educational Technology and Social Science Education. The validators made adequate corrections on the purpose of the study, research questions and questionnaire items. A pilot study is conducted in a similar tertiary institution to refine the instrument. Reliability is tested using

Cronbach's Alpha coefficient, with a threshold of 0.70 considered acceptable for internal consistency. Data collection is conducted through direct administration of questionnaires and scheduled interviews.

The Statistical Package for Social Science (SPSS v. 25) was used to analyse collected data. The research questions was answered using mean and standard deviation. A bench mark of 2.50 was set. The mean score below 2.50 was disagree while those between 2.50 and above was agree.

Presentation of results

This results of the data collected and anlyszed are presented according to the research questions

Research Question 1: What is the level of AI integration in Social Science Education at FCE Obudu?

Table 1: The mean and standard deviation of assess the Level of AI Integration in Social Science Education

AI Tools	SA	A	D	SD	Mean	Std. Deviation	Decision
Automated Grading Systems	**90**	**73**	**60**	**68**	**2.64**	**13.9**	Moderate
AI Research Assistants	**86**	**77**	**63**	**65**	**2.63**	**13.8**	Moderate
Adaptive Learning Systems	**95**	**70**	**60**	**66**	**2.66**	**14.1**	Moderate
Overall Mean					**2.64**	**13.9**	Moderate

Descriptive analysis revealed that the Automated grading system has a mean of 2.64 with a corresponding standard deviation of 13.9 (Mean = 2.64, S.D = 13.9), AI research assistant (Mean = 2.63, S.D = 13.8), Adaptive learning systems (Mean = 2.66, S.D = 14.1). However the overall mean value is 2.64 which a moderate level of AI integration. AI tools commonly reported include automated grading systems, AI-powered research assistants, and digital learning platforms. However, advanced adaptive learning systems were reported as limited. The findings indicate that while AI tools are present, their usage is not yet fully institutionalized. Infrastructure and training gaps limit deeper integration.

H_{01}: There is no significant relationship between the integration of Artificial Intelligence tools and the quality of social science education at FCE Obudu.

Regression Analysis: AI tools and quality of social education

Model	R	R^2	Adjusted R^2	Beta (β)	Sig. (p-value)
AI ? Development	0.62	0.38	0.36	0.62	0.000

The regression results indicate a statistically significant positive relationship between Artificial Intelligence integration and sustainable national development ($\beta = 0.62$, $p < 0.05$). The R^2 value of 0.38 implies that approximately 38% of the variation in sustainable development outcomes is explained by AI integration in Social Science Education at FCE Obudu while 62% is attributed to other factor s other than AI development tools. This confirms that AI serves as a catalytic variable in enhancing human capital development and educational transformation.

Research Question 2: How does AI integration influence teaching effectiveness and student learning outcomes?

Table 2. **The mean and standard deviation of the** AI integration influence teaching effectiveness and student learning outcomes

Variable	SA	A	D	SD	Mean	Std. Deviation	Decision
Teaching Effectiveness	90	72	69	60	**2.66**	14. **0**	High
Student Engagement	86	78	62	65	**2.64**	**13.4**	High
Research Productivity	60	79	66	94	**2.41**	**12.8**	High
Overall Mean					2.57	13.4	High extent

Results showed that; **for** Teaching Effectiveness the mean is 2.66 with a corresponding standard deviation of 14.0 (Mean = 2.66, S.D = 14.0), Student Engagement has a mean of 2.64 and standard deviation of 13.4 (Mean = 2.64, S.D = 13.4) and Research Productivity has a mean of 2.41 and standard deviation of 12.8 (Mean = 2.41 , S.D = 12.8). However the overall mean value is 2.57 which show a high extent at which AI integration influence teaching effectiveness and student learning outcomes. Teaching Effectiveness, Student Engagement and Research Productivity Respondents reported improved access to learning resources, enhanced research capacity, and faster feedback mechanisms. Therefore, AI integration significantly enhances instructional delivery and learning engagement, supporting the argument that AI can improve educational quality in Social Science disciplines.

H_{02}: Artificial Intelligence-driven instructional strategies have no significant effect on students' critical thinking, analytical competence and digital literacy in social science disciplines at FCE Obudu.

Regression Analysis: Artificial Intelligence-driven instructional strategies and digital literacy in social science discipline

Model	R	R^2	Adjusted R^2	Beta (β)	Sig. (p-value)
AI ? Development	0.70	0.50	0.45	0.70	0.000

The regression results indicate a statistically significant positive relationship between Artificial Intelligence integration and sustainable national development ($\beta = 0.70$, $p < 0.05$). The R^2 value of 0.50 implies that approximately 50% of the variation in sustainable development outcomes is explained by AI integration in Social Science Education at FCE Obudu while 70% is attributed to other factor s other than AI development. This confirms that AI serves as a catalytic variable in enhancing human capital development and educational transformation.

Research Question 3: How does AI-driven social science education promote the sustainable national development outcomes in Nigeria?

Table 3: The mean and standard deviation of the AI-driven social science education promote the sustainable national development outcomes in Nigeria

Variable	SA	A	D	SD	Mean	Std. Deviation	Decision
Access to reliable information	100	72	69	50	**2.76**	**25.2**	High
Promote transparency	70	73	62	86	**2.44**	**12.7**	High
Contributes to sustainable economic development	60	75	70	86	**2.37**	12. **5**	High
Overall mean					**2.52**	**16.8**	High extent

Descriptive analysis revealed that the **Access to reliable information** has a mean of 2.76 with a corresponding standard deviation of 25.2 (Mean = 2.76, S.D = 25.2), **Promote transparency** (Mean = **2.44,** S.D = **12.7**), **Contributes to sustainable economic development** (Mean = **2.37**, S.D = 12.5). However the overall mean value is 2.52 which a high extent of AI-driven promote the sustainable national development outcomes in Nigeria. AI-driven commonly reported include **Access to reliable information**, **Promote transparency**, and **Contributes to sustainable**

economic development. However, Respondents reported improved access to learning resources, enhanced research capacity, and faster feedback mechanisms.

H_{03}: AI-driven does not significantly promote the sustainable national development outcomes in Nigeria.

Regression Analysis: Artificial Intelligence-driven and sustainable national development outcomes in Nigeria.

Model	R	R^2	Adjusted R^2	Beta (β)	Sig. (p-value)
AI ? Development	0.58	0.34	0.37	0.58	0.000

The regression results indicate a statistically significant positive relationship between Artificial Intelligence integration and sustainable national development ($\beta = 0.58$, $p < 0.05$). The R^2 value of 0.34 implies that approximately 34% of the variation in sustainable development outcomes is explained by AI integration in Social Science Education at FCE Obudu while 58% is attributed to other factor s other than AI development. This confirms that AI serves as a catalytic variable in enhancing human capital development and educational transformation AI driven significantly enhances instructional delivery and learning engagement, supporting the argument that AI can improve sustainable national development in Social Science disciplines.

Discussion of Findings

i. The study revealed that AI integration at FCE Obudu is moderate. Lecturers and students reported frequent use of automated grading systems and AI research assistants. However, advanced AI tools, such as adaptive learning systems and intelligent tutoring platforms, were underutilized due to infrastructural limitations, insufficient digital literacy among staff, and limited institutional support.

ii. AI integration significantly enhanced teaching effectiveness, student engagement, and research productivity. Lecturers reported improved instructional delivery and access to interactive learning resources. Students noted faster feedback and more personalized learning experiences, leading to increased motivation and academic performance.

iii. Regression analysis indicated a statistically significant positive relationship between AI-driven education and sustainable national development. AI-enhanced Social Science Education contributed to human capital formation, critical thinking development, civic competence, and preparedness for a knowledge-based economy, highlighting AI's potential as a catalyst for socio-economic development.

Conclusion

Based on the findings, the study concludes that Artificial Intelligence serves as a catalytic tool in strengthening Social Science Education and promoting sustainable national development in Nigeria. Although AI adoption at FCE Obudu remains at a developing stage, its impact on instructional delivery, critical thinking development, and research efficiency is significant.

The study affirms that AI-driven educational transformation contributes directly to human capital formation, digital literacy enhancement, and democratic consolidation. However, infrastructural limitations, inconsistent power supply, funding constraints, and insufficient advanced AI training remain major challenges limiting optimal utilization.

Therefore, strategic investment in AI infrastructure, policy formulation, and institutional capacity-building is essential for maximizing the developmental benefits of AI in Nigeria's teacher education system.

Recommendations

The following recommendations were made based on the findings of the study:

i. FCE Obudu should strategically invest in advanced AI platforms and provide comprehensive training for both lecturers and students. Institutional policies should promote the integration of

AI tools into classroom teaching, research activities, and assessment processes to ensure optimal usage and sustainability.

ii. The institution should institutionalize AI-supported pedagogical practices by incorporating AI into daily teaching and assessment routines. Continuous professional development programs should be provided to lecturers, emphasizing AI literacy, instructional design, and digital teaching strategies.

iii. Policymakers and educational administrators should prioritize AI infrastructure development, formulate supportive institutional policies, and integrate AI literacy into teacher education curricula. These measures will ensure that AI-driven education contributes effectively to Nigeria's sustainable national development goals.

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