

## Exploring the Role of Artificial Intelligence in Enhancing the Quality of Teaching and Learning Social Science Education for Sustainable National Development in Imo State, Nigeria

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### Abstract

The study examined Exploring the Role of Artificial Intelligence in Enhancing the Quality of Teaching and Learning Social Science Education for Sustainable National Development, with a focus on tertiary institutions in Imo State, Nigeria. The objective is to know: what is the level of awareness and adoption of Artificial Intelligence in Social Science Education in tertiary institution, to explore the relationship between AI-driven pedagogy of students' critical thinking, civic competence, and employability skills in social science education and national development. A cross-sectional research design was adopted and data were collected from lecturers and students in selected tertiary institutions using a structured questionnaire. The sample size for the study was 600 respondents. Pearson's Product Moment Correlation Coefficient ( $r$ ) was used to test the hypotheses at a 0.05 level of significance. The findings of this research are expected to contribute to policy discussion on the role of AI in Enhancing the Quality of Teaching and Learning Social Science Education. The study concludes that AI has the potential to contribute effectively in the quality of teaching and learning at this digital era in Nigeria. It recommends, increased investment in digital infrastructure, capacity building for academic staff, and the integration of AI tools into social science curricula to enhance teaching quality, student competence in tertiary institutions.

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## **Background to the Study**

The education sector is globally experiencing a profound transformation driven by rapid advancements in digital technologies, particularly artificial intelligence (AI). Artificial intelligence has increasingly become a strategic tool in education, reshaping pedagogical practices through personalized learning systems, intelligent tutoring platforms, automated assessment, and data-driven instructional decision-making (Holmes et al., 2019). In advanced economies, AI-driven pedagogy is being adopted to enhance learners' critical thinking, creativity, collaboration, and problem-solving abilities skills considered essential for national competitiveness and sustainable development in the twenty-first century (OECD, 2021). As nations strive to build knowledge-based and innovation-driven economies, higher education institutions are expected to produce graduates who are not only knowledgeable but also adaptable and socially responsive.

In social science education, AI-driven pedagogy presents significant opportunities for improving the teaching and learning of complex social, political, and economic issues. Social science education plays a critical role in shaping civic consciousness, democratic values, ethical reasoning, and national identity. Through AI-powered simulations, virtual learning environments, and learning analytics, students can better engage with real-world societal challenges such as governance, inequality, globalization, and development planning (Luckin et al., 2016). As a result, the integration of AI into social science pedagogy is increasingly viewed as a pathway to strengthening the relevance of education to national development goals across the globe (UNESCO, 2020).

Interest in artificial intelligence for educational development across Africa, has grown steadily over the past decade. Many African countries recognize AI as a potential solution to persistent educational challenges, including limited teaching personnel, large class sizes, and uneven learning outcomes (World Bank, 2020). Despite this growing interest, the adoption of AI-driven pedagogy in African tertiary institutions remains constrained by infrastructural deficits, inadequate funding, low digital literacy among educators, and weak policy frameworks (Adeniran & Oyeniran, 2022). As a result, social science education in many African Universities continues to rely predominantly on traditional, lecture-based instructional approaches, limiting students' ability to apply social knowledge to development-oriented problem-solving.

In Nigeria, the relevance of social science education to national development is well established. Social science disciplines such as social studies, economics, political science, sociology, and geography are designed to equip learners with the knowledge, skills, values, and attitudes necessary for nation-building, civic participation, social integration, and economic progress. However, despite Nigeria's growing digital economy and increasing emphasis on technological innovation, the pedagogical practices in many tertiary institutions remain largely conventional and teacher-centered (Adebayo & Adigun, 2021). This disconnect has raised concerns about the capacity of Nigerian graduates to address pressing national development challenges such as unemployment, insecurity, poor governance, and

social inequality. Although the Nigerian government has introduced several policies aimed at integrating information and communication technology (ICT) into education, the practical deployment of AI-driven pedagogy in tertiary institutions is still at an emerging stage. Studies indicate that many lecturers lack adequate training in advanced educational technologies, while institutions face challenges related to unreliable electricity supply, limited internet connectivity, and insufficient institutional support for innovation (Okoye et al., 2023). These challenges have implications for the quality of social science education and its contribution to national development, particularly in terms of producing graduates with strong analytical, civic, and problem-solving competencies.

At the state level, Imo State presents a unique context for examining AI-driven pedagogy in social science education. The state hosts several tertiary institutions, including Universities, Colleges of education, and Polytechnics, which play a vital role in human capital development and regional socio-economic growth. Still, many of these institutions continue to grapple with inadequate digital infrastructure, limited access to AI-based educational tools, and insufficient professional development opportunities for lecturers (Eze & Olatunji, 2022). These constraints affect the extent to which AI-driven pedagogical strategies can be effectively integrated into social science teaching and learning processes. Given Imo State's aspirations for educational advancement and sustainable development, there is a growing need to appraise the extent to which artificial intelligence-driven pedagogy is being adopted in social science education within its tertiary institutions and to examine the implications of such adoption for national development. Understanding lecturers' readiness, institutional capacity, and students' learning experiences in relation to AI-based pedagogy is essential for informing educational policy, improving instructional practices, and strengthening the contribution of social science education to both state and national development objectives. Against this background, this study focuses on artificial intelligence-driven pedagogy in social science education and its implications for national development, an appraisal of tertiary institutions in Imo State, Nigeria.

### **Objectives of the Study**

The study evaluated Exploring the Role of Artificial Intelligence in Enhancing the Quality of Teaching and Learning Social Science Education for Sustainable National Development, an appraisal of Tertiary Institutions in Imo state, Nigeria. Specifically, it assessed:

1. What is the level of awareness and adoption of Artificial Intelligence in Social Science Education in tertiary institution?
2. What challenges are associated with the implementation of Artificial Intelligence in Social Science Education?
3. How can the integration of Artificial Intelligence in social science education contribute to national development?
4. AI-driven pedagogy of Students' critical thinking, civic competence, and employability skills in social science education
5. What is the effect of Artificial Intelligence on a lecturer's teaching method and instructional effectiveness?

## Research Hypotheses

The following null hypotheses were tested in the study.

1. There is no significant effect of Artificial Intelligence on a lecturer's quality of teaching and learning method in social science courses.

## Scope of the Study

The study focused on artificial intelligence–driven pedagogy in social science education and its implications for national development an appraisal of tertiary institutions in Imo State, Nigeria. It is delimited to two tertiary institutions in Imo State (Imo State University and Imo State College of Education). It is also restricted to variables such as AI-driven pedagogy of quality of teaching and learning in social science courses, AI-driven pedagogy in social science education on students' critical thinking, civic competence, and employability skills and national development. Theoretically, the study was delimited to the Human Capital and Diffusion of Innovation Theories. It was also restricted to university lecturers and students in the faculties of education.

## Definition of Terms

- i. Artificial Intelligence (AI):** Technology that enables machines to simulate human intelligence.
- ii. Pedagogy:** The method and practice of teaching.
- iii. Social Science Education:** Study of human society and relationships.
- iv. Tertiary Institution:** Higher education institutions such as universities and colleges.

## Literature Review

### Concept of Artificial Intelligence in Education

AI in education refers to the use of intelligent systems to enhance learning. It includes tools like chatbots, virtual assistants, and adaptive learning systems.

### AI Pedagogy in Social Science Education

AI supports interactive and student-centered learning. It helps students understand complex social concepts through simulations and real-time feedback.

### Impact on Students

AI improves academic performance by providing personalized learning experiences. It enhances engagement, critical thinking, and problem-solving skills.

### Impact on Lecturers

AI reduces workload through automated grading and content delivery. It allows lecturers to focus more on research and student interaction.

### Challenges of AI in Education

- i. Lack of infrastructure

- ii. Limited digital literacy
- iii. High cost of implementation
- iv. Ethical concerns

### **Conceptualization of Artificial Intelligence and Social Science education**

Artificial intelligence refers to computer-based systems capable of performing tasks that require human intelligence, such as reasoning, learning, data analysis, and decision-making (Russell & Norvig, 2021). In education, AI includes tools such as intelligent tutoring systems, learning analytics platforms, AI-assisted research tools, and adaptive learning environments. In social science education, AI supports inquiry-based learning, critical engagement with social data, and personalized learning experiences (Holmes et al., 2019).

According to Luckin et al. (2016), AI-supported learning environments help students develop higher-order cognitive skills by scaffolding complex thinking processes. In the context of social science education, this enables students to move beyond memorization toward evidence-based reasoning and social problem-solving. Digital literacy refers to the ability to effectively access, evaluate, create, and communicate information using digital technologies (UNESCO, 2018). AI-supported digital tools expose students to online research platforms, academic databases, collaborative learning systems, and ethical technology use. In teacher education institutions, digital literacy is particularly important, as future educators are expected to integrate technology into classroom practice. Redecker (2017), notes that AI-enhanced digital environments strengthen learners' confidence, adaptability, and lifelong learning capacities. Selwyn, (2019) the integration of AI into social science education improves quality of teaching and learning, student engagement and participation, research competence and innovation, employability and teaching readiness. These outcomes are influenced by institutional factors such as infrastructure availability, lecturer competence, and curriculum design (Selwyn, 2019).

### **Artificial Intelligence and National Development**

Artificial intelligence (AI) involves the use of intelligent technologies such as machine learning, data analytics, automation, and decision-support systems to enhance efficiency and innovation across sectors (Holmes et al., 2019). When effectively adopted, AI contributes to national development by improving productivity, service delivery, and human capital development. In the education sector, particularly social science education, AI-driven tools enhance teaching effectiveness, support personalized learning, and promote the acquisition of critical thinking, civic competence, and employability skills. These competencies are essential for developing informed and socially responsible citizens capable of contributing to democratic governance and sustainable national development (UNESCO, 2020). National development is a multidimensional concept encompassing economic growth, social inclusion, good governance, innovation capacity, and human capital development. Countries that integrate AI into education, governance, and economic systems experience improved institutional efficiency, better policy outcomes, and enhanced workforce readiness (nwankwo, 2021). AI influences national development indirectly through mediating factors

such as improved learning outcomes, workforce productivity, and civic participation. However, in developing contexts like Nigeria, inadequate infrastructure, limited access to technology, and weak regulatory frameworks can constrain these benefits, moderating the impact of AI on development outcomes (World Bank, 2020; Adeniran & Oyeniran, 2022).

### **Empirical literature**

#### **AI-driven pedagogy of quality of teaching and learning in social science courses and national development**

Empirical evidence increasingly shows that artificial intelligence can support teachers' instructional practices by enabling adaptive learning pathways and providing real-time feedback that responds to individual learners' needs. Studies indicate that such AI-supported environments allow teachers to move beyond one-size-fits-all instruction toward more personalized and effective teaching approaches. For instance, Malik et al. (2025) reported that the use of Intelligent Tutoring Systems (ITS) led to notable improvements in student engagement and learning outcomes. Their findings revealed statistically significant gains in post-test performance, which were attributed to AI-driven personalization and continuous feedback. This suggests that, when combined with conventional teaching methods, AI tools can enhance both the quality of instruction and students' academic achievement. Beyond classroom technology, leadership and institutional support have been identified as crucial factors in the successful adoption of AI-driven pedagogy. Khan et al. (2025) found that schools where leaders invested in teacher training, provided ethical guidance, and aligned AI use with curricular goals experienced more meaningful classroom integration of AI tools. Their study emphasizes that effective AI-supported teaching depends not only on the availability of technology but also on pedagogical alignment, institutional readiness, and supportive leadership structures. Teachers' perceptions of AI also play an important role in shaping its classroom use. Qualitative findings by Nisar, Bashir, and Ahmad (2023) show that many teachers view AI positively, particularly for its ability to support differentiated instruction and provide tailored learning assistance. However, the study also highlights notable challenges, including limited technical competence and concerns that excessive reliance on AI could reduce human interaction in teaching if pedagogical goals are not clearly prioritized. Research focusing specifically on the social sciences reflects similar trends. Studies on AI integration in Social Studies pedagogy reveal that both students and educators recognize AI's potential to enhance subject-specific knowledge and skill acquisition.

These improvements are associated with richer learning experiences and better preparation for future careers. In the Nigerian tertiary education context, empirical findings further indicate that students who are more aware of AI and its educational benefits tend to report improved learning experiences. Nonetheless, challenges such as inadequate infrastructure, limited technical support, and uneven access to digital tools continue to constrain effective implementation. At the secondary school level, Ododo et al. (2024) observed that Social Studies teachers in IMO State demonstrated a high level of readiness to integrate AI and e-learning platforms into their teaching. The study linked this preparedness to more engaging content delivery, improved classroom interaction, and increased student participation,

suggesting positive implications for instructional quality and learning outcomes aligned with national education objectives. Similarly, studies conducted in higher education show that AI-driven pedagogical approaches are associated with improved academic performance, particularly when AI is used to support formative assessment and personalized learning pathways. These outcomes reinforce the argument that AI-enhanced education can contribute to skill development and workforce readiness, which are critical elements of national development.

### **AI-driven pedagogy of students' critical thinking, civic competence, and employability skills in social science education and national development**

Recent empirical and review-based studies demonstrate that AI-driven pedagogy is reshaping teaching and learning by influencing students' critical thinking, ethical awareness, and skill development, while also raising important concerns about assessment integrity, inclusion, and pedagogical design. Rusandi et al. (2023) examined the use of generative AI tools such as ChatGPT in educational and research contexts, emphasizing their potential to support learning when aligned with critical thinking and academic integrity. Their findings suggest that AI can enhance students' analytical and evaluative skills by encouraging deeper engagement with information, particularly when learners are guided to question sources, detect misinformation, and reflect on context. However, the authors stress that these benefits depend on deliberate instructional strategies that prioritize critical thinking over mere content generation. This study highlights AI's role as a complementary tool rather than a substitute for human reasoning in education.

Focusing on assessment practices, Estaphan et al. (2025) explored the challenges and opportunities associated with AI-assisted student assignments in higher education. Their empirical consensus-based framework revealed that while AI can support idea generation and organization, unstructured use may weaken students' critical thinking and compromise academic integrity. The study identified key pedagogical strategies such as process-oriented assessment, AI literacy development, and AI-free validation tasks that help preserve higher-order cognitive skills. Importantly, the authors link AI-supported pedagogy to the development of employability skills, including adaptability, ethical judgment, and human AI collaboration, which are increasingly valued in AI-driven labour markets. From an inclusion and measurement perspective, Adako et al. (2025) reviewed empirical studies on AI-assisted education for children with autism spectrum disorder (ASD), emphasizing evaluation and long-term impact. Their findings show that AI-powered tools can enhance personalized learning, social skills, and academic outcomes when supported by robust assessment frameworks. Although focused on special education, the study provides broader pedagogical insights relevant to social science education, particularly the importance of ethical AI use, explainability, and accountability. The authors argue that without careful measurement and human oversight, AI's educational benefits may be uneven or misaligned with learners' developmental needs.

Taken together, these studies suggest that AI-driven pedagogy can support critical thinking, ethical reasoning, and employability-related skills when embedded within intentional instructional design and strong assessment frameworks. However, the literature consistently emphasizes that AI's educational value is not automatic. Effective outcomes depend on teacher guidance, AI literacy, ethical safeguards, and pedagogical approaches that prioritize reasoning, reflection, and human AI collaboration.

These findings underscore the need for balanced and context-sensitive integration of AI in social science education to ensure meaningful learning and skill development. AI tools such as intelligent tutoring systems, automated feedback platforms, and generative learning applications can encourage students to engage more actively with learning materials. Rather than passively receiving information, learners are prompted to analyse ideas, evaluate different perspectives, and reflect on their reasoning processes. Lu et al. (2025) found that students exposed to AI-assisted learning activities demonstrated higher levels of analytical reasoning and problem-solving than those taught through conventional methods. Similarly, Holmes et al. (2019) observed that AI-based feedback systems support meta-cognitive engagement by helping learners identify gaps in understanding and refine their thinking. Within social science classrooms, AI tools have been used to support inquiry-based and discussion-oriented learning. Studies indicate that AI-generated discussion prompts, simulations, and scenario-based tasks help students explore complex civic issues such as governance, democratic processes, and public policy. These approaches require learners to interpret information, weigh evidence, and justify decisions, thereby promoting higher-order thinking and deeper civic understanding (UNESCO, 2020).

Research also shows that AI-driven pedagogy can contribute to the development of civic competence, a core objective of social science education. Empirical findings from citizenship and civics education suggest that adaptive learning platforms and interactive digital tools increase student engagement with civic content and improve understanding of civic institutions and responsibilities (Baihaqi et al., 2024). Nisar, Bashir, and Ahmad (2023) reported that while teachers generally view AI as useful for enriching instruction, excessive reliance on AI without guided discussion may limit opportunities for moral reasoning, dialogue, and democratic participation. This highlights the continued importance of teacher-led inquiry and ethical reflection in AI-supported civic education. Beyond cognitive and civic outcomes, empirical literature increasingly links AI-driven pedagogy to the development of employability skills, including problem-solving, digital literacy, adaptability, and collaboration. Studies show that students who acquire AI-related skills through structured learning experiences often report higher levels of career confidence and better alignment with labour market expectations (OECD, 2021).

Alkhawaja et al. (2025) found that exposure to AI-enhanced learning environments positively influenced students' digital competence and analytical skills, both of which are essential for success in technology-driven economies. In the Nigerian context, evidence also points to the potential of AI-driven pedagogy in social science education. Ododo et al. (2024)

observed that Social Studies teachers who were prepared to integrate AI and e-learning platforms created more engaging and interactive learning environments, which supported students' skill development. However, studies further note that limited infrastructure, inadequate training, and unequal access to digital resources remain major barriers to the effective use of AI in many developing contexts (World Bank, 2020).

## **Theoretical framework**

### **Diffusion of Innovation Theory**

The Diffusion of Innovation Theory, developed by Everett Rogers (1962), explains how new ideas, technologies, or practices are introduced and gradually spread within a social system over time through communication and social interaction. Rather than being adopted all at once, innovations diffuse slowly as individuals and institutions learn about them, form attitudes, make decisions, and evaluate their usefulness in real-life contexts. A central idea of the theory is that people and organizations differ in their readiness to accept change.

Adoption typically follows a series of stages beginning with awareness or knowledge, followed by persuasion, decision, implementation, and finally confirmation, where users decide whether to continue or discontinue the innovation. Rogers also categorized adopters into five groups: innovators, early adopters, early majority, late majority, and laggards to explain why some individuals embrace new technologies quickly while others remain cautious or resistant. The theory further suggests that the rate at which an innovation spreads depends on several key factors, including its perceived usefulness, ease of use, compatibility with existing practices, and the level of institutional and technical support available. When an innovation is seen as beneficial, simple to use, and aligned with current values or routines, it is more likely to be adopted widely. In the context of education, Diffusion of Innovation Theory provides a useful framework for understanding how new teaching methods and technologies such as AI-driven instructional tools are introduced, accepted, or resisted by educators and institutions.

Teachers' attitudes toward technology, their level of digital competence, leadership support, availability of infrastructure, and enabling policies all play critical roles in shaping the pace and success of adoption. This theory is particularly relevant to the present study because AI-driven pedagogy is still an emerging innovation in many tertiary institutions in Imo State, Nigeria. It helps explain variations in AI adoption across institutions and departments, differences in lecturers' willingness and readiness to integrate AI tools into teaching, as well as institutional challenges such as inadequate infrastructure, limited training opportunities, and policy constraints. By applying this theory, the study gains a clearer understanding of the social and institutional dynamics influencing the adoption of AI-driven pedagogy and its implications for educational quality and national development.

### **Human Capital Theory**

Human Capital Theory, as advanced by Theodore Schultz (1961) and later expanded by Gary Becker (1964), views education not simply as a social service but as a strategic investment in

people. Schultz argued that spending on education improves individuals' productive capacities in much the same way that investment in physical capital enhances industrial output. Building on this idea, Becker demonstrated that education, training, and skills acquisition directly contribute to economic productivity and long-term national growth. At the core of Human Capital Theory is the assumption that education and training are investments rather than forms of consumption. The knowledge, skills, and competencies acquired through education increase individuals' productivity, which in turn leads to higher earnings at the individual level and economic growth at the societal level. Importantly, the theory emphasizes that the quality of education not merely access to it plays a decisive role in shaping development outcomes. Societies that prioritize modern, relevant, and skills-oriented education systems are therefore better positioned to achieve sustainable development.

Human Capital Theory also maintains that teaching methods, curriculum content, and instructional technologies contribute to learners' skill development. Contemporary pedagogical approaches, such as AI-driven pedagogy is viewed as powerful tools for improving learning efficiency, deepening students' understanding of complex concepts, and fostering critical, digital, and employability skills that are increasingly demanded in today's labour market. This theory is particularly relevant to the present study because the integration of AI-driven pedagogy in social science education represents a deliberate investment in human capital development. By incorporating AI tools into teaching and learning processes in tertiary institutions in Imo State, students are more likely to develop critical thinking and analytical abilities, digital and technological competencies, as well as civic awareness and problem-solving skills. Collectively, these competencies enhance graduates' productivity and employability, strengthen workforce quality, improve institutional efficiency, and ultimately contribute to broader national development outcomes.

### **Methodology**

The study adopted a cross-sectional research design. this was because the design was concerned with the study of large and small populations with emphasis on the incidence, distribution, and interrelations of sociological and psychological factors, (Isangedeghi, Joshua, Asim & Ekuri, 2014). The population of this study comprise all social science lecturers and students in selected tertiary institutions (Faculty of Education in Imo state university and Imo state college of education ihitte uboma), Nigeria. The sample size for this study was 600 respondents. A statistically determined sample size was adopted to ensure representativeness. This was made up of lecturers and students in the study area. The Kish Leslie (1965) formula for cross sectional studies was used to determine the sample size. The sampling techniques adopted for this study were purposive sampling and snowball sampling techniques. The randomly selected tertiary educational institutions in Imo State were Imo state university and Imo state college of education ihitte uboma Data was collected using a structured questionnaire titled Artificial Intelligence–Driven Pedagogy and National Development Questionnaire (AIPNDQ). It was structured to reflect the four-point likert-scale type of strongly agree, agree, strongly disagreed and disagreed accordingly. The

instrument was validated by experts in the faculties of education and social sciences in the study area. Reliability of the research instrument was determined using Cronbach's alpha coefficient. Data was analyzed using descriptive statistics (frequency, mean, standard deviation) and inferential statistics (Pearson product moment correlation coefficient). at 0.05 level of significance. This was carried out with the help of the Statistical Package for Social Sciences (SPSS) software for analysis and results presented in tables, Informed consent was obtained from all participants. Confidentiality and anonymity were assured, and participation was voluntary.

## Results

Result of the data collected was presented based on the specific hypotheses as shown below:

### Hypothesis one

There is no significant effect of Artificial Intelligence on a lecturer's quality of teaching and learning in social science courses. Pearson Product Moment correlation coefficient ( $r$ ) was adopted for analysis. Result of the analysis as presented in Table 1 revealed that the calculated  $r$ -value of 0.947 is significant at 0.05 levels of significance with 614 degrees of freedom. With this result, the null hypothesis was rejected while the alternate hypothesis which states that there is a significant effect of AI-driven pedagogy of quality of teaching and learning in social science subjects/courses and national development was accepted. This result implied that, AI-driven pedagogy in the quality of teaching and learning in social science subjects/courses enhances national development. The positive  $r$  implied that the higher adoption AI-driven pedagogy of quality of teaching and learning in social science subjects/courses.

**Table 1:** Pearson Product Moment Correlation (PPMC) analysis of the effect of AI on the quality of teaching and learning in social science subjects and. national development. (N=616)

Variables	Mean	SD	r-value	Sig.
What is the effect AI on the quality of teaching and learning in Social Science subjects/courses	20.92	2.054	0.945	.05
National development	20.54	2.73		

Significant at .05,  $r$ -value = 0.945,  $df$  = 614

**Source:** Field survey, 2025

### Hypothesis two

There is no significant relationship between AI-driven pedagogy of students' critical thinking, civic competence, and employability skills in social science education and national development. To test this hypothesis, Pearson Product Moment Correlation (PPMC) was adopted for analysis. Result of the analysis as presented in table 2 revealed that the calculated  $r$ -

value of 0.616 is significant at 0.05 levels of significance with 614 degrees of freedom. With this result, the null hypothesis was rejected while the alternate hypothesis which states that there is a significant relationship between AI-driven pedagogy of students' critical thinking, civic competence, and employability skills in social science education and national development was accepted. The positive r implied that higher students' critical thinking, civic competence, employability skills can enhance national development.

**Table 2:** Pearson Product Moment Correlation Analysis of the relationship between AI-driven pedagogy of students' critical thinking, civic competence in social science education and employability skills and national development. (N=512)

Variables	Mean	SD	r-value	Sig.
AI-driven pedagogy of Students' critical thinking, civic competence, and employability skills in social science education	20.67	2.90		
National development	20.545	2.732	0.512	.05

\* Significant at .05, p-value = 0.512, df = 614

**Source:** Field survey, 2025

### Discussions

The findings of this study provide empirical evidence on the role of AI-driven pedagogy in enhancing social science education and promoting national development. Specifically, the results of Hypothesis One revealed a significant effect of AI-driven pedagogy on the quality of teaching and learning of social science subjects and courses, with clear implications for national development. This finding makes known that the integration of artificial intelligence into teaching and learning processes particularly within tertiary institutions in Imo State has the potential to improve instructional quality, learner engagement, and educational outcomes, which are critical drivers of national development.

This result corroborates the findings of Malik et al. (2025) and Khan et al. (2025), who reported that the adoption of Intelligent Tutoring Systems (ITS) significantly improved student engagement, learning outcomes, and academic performance. Their studies emphasized that institutions that invested in teacher capacity building, provided ethical and pedagogical guidance, and aligned AI applications with curricular objectives experienced more effective and sustainable integration of AI technologies. The statistically significant gains observed in post-test performance in these studies were largely attributed to AI-enabled personalization, adaptive learning pathways, and continuous feedback mechanisms. Based on this study, these findings underscore the capacity of AI-driven pedagogy to strengthen the teaching and learning of social science education, thereby contributing to improved educational quality in tertiary institutions in Imo State and Nigeria at large.

The result of Hypothesis Two further revealed a significant relationship between AI-driven pedagogy in terms of students' critical thinking, civic competence, and employability skills in social science education and national development. This finding implies that the effective use of AI tools in social science classrooms can enhance higher-order cognitive skills, foster civic awareness, and equip students with relevant employability skills necessary for active participation in socio-economic and political development. This finding aligns with the studies of Rusandi et al. (2023) and Adako et al. (2025), which demonstrated that AI-supported learning environments can enhance students' analytical and evaluative abilities by promoting deeper engagement with information. These studies highlighted that when learners are guided to interrogate sources, detect misinformation, and reflect critically on social contexts, AI becomes a powerful tool for nurturing critical thinking and civic competence. Similarly, Adako et al. (2025) reported that AI-powered tools enhance personalized learning, social skills development, and academic achievement when supported by robust assessment and monitoring frameworks.

Despite these positive outcomes, the present study also revealed significant structural and institutional barriers to the effective implementation of AI-driven pedagogy. Limited digital infrastructure, inadequate access to computers and mobile devices, insufficient technical training for lecturers, and unequal access to digital resources were identified as major constraints in many tertiary institutions, including the Imo State University and Imo State College of Education, Ihitte Uboma. These challenges limit the extent to which AI can be effectively deployed to achieve its full educational and developmental potential. Consequently, the findings highlight the urgent need for evidence-based policy formulation and implementation aimed at strengthening digital infrastructure, improving staff training, and ensuring equitable access to AI-enabled learning resources. Addressing these challenges is essential for maximizing the benefits of AI-driven pedagogy in social science education and for leveraging education as a strategic instrument for sustainable national development in Imo State and Nigeria as a whole.

## **Conclusion**

This study examined Exploring the Role of Artificial Intelligence in Enhancing the Quality of Teaching and Learning Social Science Education for Sustainable National Development with a focus on tertiary institutions in Imo State, Nigeria. The findings demonstrate that the integration of AI into teaching and learning processes significantly enhances the quality of instruction and student engagement in social science disciplines. Through personalized learning, adaptive feedback, and improved instructional delivery, AI-driven pedagogy contributes to better learning outcomes and strengthens the overall quality of higher education.

The study further established that AI-supported social science education positively influences students' critical thinking skills, civic competence, and employability. By encouraging analytical reasoning, informed civic participation, and practical problem-solving, AI tools help prepare students to respond effectively to contemporary societal and

labour market demands. These outcomes underscore the strategic importance of social science education, supported by AI, in building human capital essential for sustainable national development.

Despite these positive effects, the study revealed persistent challenges limiting effective AI adoption in tertiary institutions, including inadequate digital infrastructure, insufficient access to technological devices, limited staff training, and unequal access to digital resources. These constraints highlight the need for a coordinated and policy-driven approach to AI integration in higher education.

In conclusion, AI-driven pedagogy holds significant potential to transform social science education and contribute to national development in Nigeria. Realizing this potential requires deliberate investment in infrastructure, capacity building, and ethical, curriculum-aligned implementation of AI technologies within tertiary institutions.

### **Recommendation**

Tertiary institutions in Imo State should deliberately integrate AI tools into the teaching of social science courses to improve instructional quality and learning outcomes. This can be achieved by adopting AI-supported learning management systems, intelligent tutoring platforms, and data-driven assessment tools that support personalized learning and timely feedback. Institutional leadership should prioritize regular training and re-training of lecturers to build their confidence and competence in the ethical and pedagogical use of AI. Government and regulatory agencies should also provide funding and policy guidance to ensure that AI integration aligns with national education and development goals. Social science curricula should be redesigned to encourage inquiry-based and problem-solving learning supported by AI technologies. AI tools should be used to expose students to real-life social issues, data analysis, civic simulations, and reflective learning tasks that promote analytical reasoning and responsible citizenship. Institutions should also ensure equitable access to digital resources by improving infrastructure and providing students with affordable access to devices and internet services. By doing so, AI-driven pedagogy can better equip graduates with the skills required for active civic engagement and meaningful participation in Nigeria's socio-economic development.

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