
**EXPLORING THE ROLES AND POTENTIAL OF AI-DRIVEN
TECHNOLOGIES IN TEACHING AND LEARNING
OF SOCIAL STUDIES IN OSUN STATE**

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Abstract

In this paper, the applications and the possibilities of the AI-based technologies in teaching and learning of Social Studies education will be discussed. The role that this paper intends to fill is to explore the way that can make artificial intelligence properly structured in order to foster learning and teaching of Social Studies education among the educators and the learners. The advent of Artificial Intelligence (AI) in educational process is rapidly reshaping the learning process of a student, as well as the teaching methods of teachers and has extensive implications on a diverse spectrum of disciplines, including the Social Studies education. Two hypotheses and two research questions were tested. Design that will be used in this study is the qualitative design, that is, descriptive survey research design whereby the targeted population that was studied were Social Studies teachers in the public school within the Osun State, Osogbo Local Government Area. Total respondents of 120 (120 teachers) were chosen out of 10 public schools. The respondents (teachers) were given questionnaires, which

were self-administered to evaluate their knowledge, perceptions and experiences with application of Social Studies education using AI-Driven technologies. The research tool is also validated by an examination of the tool by experts to make sure that they are gauging what they intend to gauge. A reliability experiment was carried out to provide consistency and dependability in answers of questionnaires. The analysis of the data collected through questionnaires was based on the descriptive statistics (percentages, mean and standard deviation) and inferential statistics (Pearson Product Moment Correlation PPMC) to identify the correlations between the variables. The research paper summarizes to conclude that the Artificial Intelligence (AI) has been a revolution in the teaching of Social Studies in Osun State, which enhances learning experiences, advances the teaching practices and increases educational access.

Keywords: Exploring, Potentials, AI-Driven, Technologies, Teaching, Learning, Social Studies.

Introduction

The breakthroughs in the information technology industry have presented groundbreaking changes in numerous aspects and the teaching sector is not an exception. The field of Social Studies is not exceptional, as one of the most popular products of the digital era also known as Artificial Intelligence (AI) offers enormous potential to redefine the process of learning. Since AI can handle and process data at high speed and accuracy, it could also bring more customized and responsive learning experiences through Social Studies (Adewumi & Yusuf, 2021).

One of the disruptive technologies in various fields has been Artificial Intelligence (AI), and education is one of them. In the educational field, AI is also offering novel ways to enhance the learning process, work of the administration, and personalisation of learning (Rane, 2023). Presented with countless opportunities, AI technology that has a potential to change the traditional

pedagogical approach offers a myriad of opportunities to both educators and students, not to mention educational institutions, in particular, the new advances of the educational technologies contributes to the designing learning environment that is conducive to the needs, the learning style and preferences of every student (Akgun & Greenhow, 2022).

The Artificial Intelligence (AI) application in education is rapidly changing the processes of acquiring knowledge by students and teachers, and it has significant consequences across different disciplines, including Social Studies (Adewumi and Yusuf, 2021). In Nigeria, where the educational environment is characterized by such pitfalls as insufficient resources, huge classes, and absence of personalized learning, AI has an opportunity to change the conduct of how Social Studies are taught and learnt. Social Studies as a subject is very important in shaping the knowledge on the part of the students about society, culture, history and political processes that influence their environment.

AI would be more beneficial to teachers in the field of Social Studies. AI can assist teachers to design more interactive lessons, analyze the performance data of students to learn the ways of improving them, and automate the administrative tasks so that teachers can dedicate more time teaching and communicating with students (Ogunleye and Odetayo, 2022). The AI-based solutions can provide the educators with the picture of the recent tendencies and resources in the sphere of pedagogy and enable teachers to be notified and improve their work. However, the deployment of AI on the teaching of Social Studies in Nigeria has certain problems. The inequality in the accessibility of technology, the digital gap between urban and rural settlements, the necessity to invest much into the education of teachers among others are to be remembered to achieve the ultimate purpose of AI in education (Duru and Eze, 2023).

By using the power of AI, Nigeria will be able to move a step closer to a more inclusive, engaging and a more effective educational system that does not only deliver knowledge but also trains the students to think critically, know culture and become

active citizens (Eze and Chinedu, 2022). This change will play an essential role in equipping the Nigerian students to operate and contribute to a faster and faster world where awareness of social dynamics and historical context is more valuable than ever before. Nevertheless, the key issue when studying Social Studies is the volume of information and its complexity that the students should master. The simplification of complex material is one of the things that AI can assist in, making it more interactive and easy to understand. Through the application of applying technology such as Natural Language Processing (NLP), AI can convert a large amount of scientific text into a more narrated and easier-to-understand form, which will help students learn what is being taught more easily (Vincent and Van Der, 2020).

Therefore, AI is not a tool of technology, but a component of the educational strategy that aims at enhancing the quality of learning and student learning outcomes (Paek& Kim, 2021). Social Studies learning should be capable of giving the learning experiences that are student-oriented learning activities, where the students engage in the learning activities in a way that they can find solutions to the problems within a designed based learning setting on the actual reality. In the world of the Internet, teachers have to deal with several factors influencing their functions and duties. Moreover, every student possesses learning needs and styles. With the help of AI technology, teachers will be able to address the difficulties of the digital age better, as well as they can create learning experiences that will meet student needs (Sugihartomo, 2020).

Due to the increasing use of artificial intelligence in society, it is finding its way into the educational practice, particularly in the Social Studies. Artificial intelligence (AI) chatbots were not originally designed to address educational purposes, but, at some point, they have managed to make a significant contribution to the achievement of various learning objectives in the educational activity (Huang, 2021). Although AI is extremely important in Social Studies education transformation, there is no specific study examining its effects on learners especially in the technologically intensive environment. The studies examining the application of

AI in education in Nigeria have grown significantly, and it shows how Nigeria is determined to use the available sophisticated technology to promote educational innovation and enhance student learning outcomes (Ogunleye & Odetayo, 2022). However, according to Organization of Economic Co-Operation and Development (OECD), in Nigeria, many learners lack high skills in problem solving in technology-rich environments. The research will contribute to this gap by looking at the role played by Artificial intelligent that is transforming Social Studies education teaching and learning in Osun State, Nigeria.

- i. identify the possible applications of artificial intelligence technologies in teaching and learning Social Studies;
- ii. evaluate the use of Artificial Intelligence in teaching and learning Social Studies education;
- iii. examine the relationship between the application of AI-driven technologies and the teaching and learning of Social Studies education; and
- iv. determine the relationship between the potential use of AI-driven technologies and the teaching and learning of Social Studies education.

Research Questions

- i. What is the possible application of AI-driven technologies be applied in the teaching and learning of Social Studies education?
- ii. What is the potential usage of AI-based technologies in Social Studies education teaching and learning?

Hypotheses

H01: There is no significant relationship between the application of AI-driven technologies and the teaching and learning of Social Studies education.

H02: There is no significant relationship between the potential use of AI-driven technologies and the teaching and learning of Social Studies education.

Methods

The description of the research design used in this research was the descriptive survey research design, which is suitable to examine the roles and the possibilities of AI-based technologies in teaching and learning Social Studies education in Osun State. The design assisted in data collection with a large population was able to know the existing trends, challenges, and opportunities in the sphere of Social Studies education. The Social Studies teachers in public secondary schools, within the Osun State in Osogbo Local Government Area were the target population. The sampling method was a simple random sampling. The sample size of 120 respondents (120 teachers) was chosen to obtain a balance and thorough analysis of the survey among 10 schools out of 12 teachers per school.

Data was gathered both in primary and secondary. The respondents (teachers) were given self-administered questionnaires to measure their knowledge, perception, and experience of the functions and the possible uses of AI-based technologies in pedagogy and learning of Social Studies education. Hence, to collect data that would be used in the implementation of the study, the researcher created a questionnaire in the format of the 4-point Likert-type scale structured questionnaire, that is, "Roles and Potential of Artificial Intelligence-based Teaching and Learning of Social Studies Questionnaire" (RPAIDTTLSSQ). The questionnaire was split into two large sections viz.: Section A. Personal data of the respondents; and Section B. 20 questions that asked the information about the roles and the potential of AI-based technologies in the learning process of Social studies education. The respondents would also indicate the level of their non-agreement or agreement of the individual items. The scores of the answers will represent as follows: Strongly Agree (SA); Agree (A); Disagree (D); and Strongly Disagree (SD). The research tool will be confirmed with the help of 3 professionals working in the field of the Department of Social Sciences education, 1 in curriculum and the other within the domain of the Social Studies education.

To carry out this research, it was founded on their corrections. The co-efficient of 0.62 was tested two times in two weeks which was considered to be a reliability test. The data of the questionnaire were analysed using descriptive statistical analysis of percentage, mean and standard deviation as well as inferential statistics of Pearson Product Moment Correlation (PPMC) to establish the relationship between the variables.

Results

Research Question 1: What is the possible application of AI-based technologies be applied in the learning and teaching of Social Studies education?

Table 1: Mean Responses on Application of Artificial Intelligence-Based Technologies in Teaching and Learning Social Studies Education

S/N	Statement	N	Mean	SD
1.	Social Studies education is improved through artificial intelligence	120	2.00	1.07
2.	Technologies based on AI are lights in education of Social Studies	120	1.98	0.95
3.	AI analyzing large volumes of information in Social studies education	120	2.7	1.17
4.	The pedagogy of Social Studies is accompanied by real time formative feedback in AI learning	120	2.98	0.84
5.	AI preconditions the emergence of a new chance to reinvent teaching -learning within the field of Social Studies education	120	3.53	0.69
6.	AI implemented in the Social Studies education is successful in the instruction approaches	120	2.92	0.84
7.	AI as source of information enhances students' performance in Social studies education	120	2.00	1.08
8.	Teaching and learning are easier while applying AI in Social Studies	120	2.13	0.90
9.	Most teachers do not know how to use AI to teach Social Studies	120	1.90	0.87
10.	Social Studies teachers need AI training for effective application	120	2.8	1.18

The result in table 1 shows the mean response of teachers to AI-driven technologies application in teaching and learning Social Studies education. Result revealed that items 1, 2, 7 and 9 have means responses lesser than 2.5 which is the average mid-point of the scale while statements in items 3, 4, 5, 6, 8 and 10 have mean responses higher than 2.5. The outcome means that the respondents did not agree with the statements item 1, 2, 7 and 9 while the rest of respondents in items 3, 4, 5, 6, 8 and 10 agreed.

Research Question 2: What is the potential usage of AI-based technologies in Teaching and learning Social Studies?

Table 2: Mean Responses on Potential use of AI-Driven Technologies in Education of Social Studies Teaching and Learning

S/N	Statement	N	Mean	SD
1.	The use of Artificial intelligent makes teaching and learning of Social studies effective.	120	2.11	0.82
2.	AI-powered manages teaching and learning in Social studies education.	120	2.34	0.79
3.	Full attraction of attention is created by AI in the teaching of Social studies.	120	1.98	0.87
4.	AI applications are frequently still in their infancy and are implemented locally or in experimental settings.	120	2.7	0.17
5.	AI brings creativity and critical thinking for supporting Social studies education.	120	3.11	0.97
6.	The use of AI in Social studies education fosters relationship between teacher and students.	120	3.37	0.72
7.	Availability of AI-driven technologies motivates teachers to teach Social studies effectively.	120	2.00	1.08
8.	Some teachers seize the opportunity of AI technologies to relax on their activities.	120	1.95	0.97
9.	The use of AI -driven in Social studies exposes students to unlawful websites.	120	1.90	0.87
10.	The use of AI makes both teacher and student lazy.	120	3.25	0.76

Table 2 demonstrates the average answer of educators to the possibility of using AI-controlled technologies in the learning and instruction of the Social Studies education. Result showed that the mean response of items 3, 7, 8 and 9 are less than 2.5 that is the

mean mid-point of the scale whereas statements in 1, 2, 4, 5, 6 and 10 have higher mean responses than 2.5. This means that the respondents did not approve the statements in item 3, 7, 8 and 9 whereas the remaining respondents in item 1, 2, 4, 5, 6 and 10 did.

Hypothesis 1: There is no significant relationship between the application of AI-driven technologies and teaching and learning of Social Studies education.

Table 3: PPMC of Application of Artificial Intelligence-Inspired Technology and Learning and Teaching of Social Studies Education

Variable	N	Mean	SD	r	P
Application of AIDriven Technology	120	13.49	1.67		
Social Studies Teaching and Learning	120	67.52	5.77	0.625*	0.000

* $P < 0.05$

Source: Field survey and analysis, 2025.

It is indicated the calculated r-value (0.625) of table 3 is significant at the $p = 0.05$ level of significant value. The null hypothesis is rejected. This means that there is a close association between the teaching and learning of Social Studies education and application of the AI based technology. The teaching and learning with the use of AI-based technology of the Social Studies education interaction are moderate and have the positive statistical significance.

Hypothesis 2: There is no significant relationship between the potential use of AI-driven technologies and teaching and learning of Social Studies education.

Table 4: PPMC of Potential use of AI-Driven Technologies and Teaching and Learning of Social Studies Education

Variable	N	Mean	SD	r	P
Potential use of AI-Driven Technology	120	13.15	1.60	0.775*	0.000
Social Studies Teaching and Learning	120	67.52	5.77		

*P<0.05

Source: *Field survey and analysis, 2025.*

Table 4 indicates that the calculated r-value (0.775) is significant at $p = 0.05$ level of significance. The null hypothesis is not approved. It implies that potential implementation of AI-based technology is quite correlated with the act of teaching and learning the Social Studies education. The connection between the possible application of AI-controlled technology and Social Studies education is moderate and statistically significant towards the positive aspect.

Discussions

The initial hypothesis analysis revealed that the null hypothesis according to which there is no significant relationship between the application of AI-driven technology and teaching and learning of Social Studies education is rejected, and the alternative hypothesis according to which there is significant relationship between the application of AI-driven technology and teaching and learning of Social Studies education is accepted.

This is consistent with the study of Adewumi and Yusuf (2021) on the application of AI-driven and Social Studies education which supports the incorporation of Artificial Intelligence (AI) within the field of education is swiftly transforming how students learn and how teachers teach, with profound implications for various subjects, including Social Studies education.

The analysis of hypothesis two showed that the null hypothesis regarding the relationship between potential use of AI-driven

technology and teaching and learning of Social Studies education is not significant is rejected and alternative hypothesis regarding the relationship between social studies potential use of AI-driven technology and teaching and learning is seen as true. This justifies the research conducted by Akgun & Greenhow (2022) on the application of AI-driven technology and the fact that the recent breakthrough in educational technologies offers novel prospects to customizing of the classroom and the learning environment proves the validity of the new advances.

Conclusion

In Nigeria, AI has radically changed the education of Social Studies by providing personalized education experiences, improving teaching practices, and improving access to educational resources. One of the spheres where AI can be successfully implemented to the Social Studies education is the increase of the learning and critical thinking. As the AI technology evolves even further, its use in education can become even more basic, and it has its prospects and risks as well. We have seen in this discussion the numerous opportunities that are presented by the implementation of AI into learning that include personalization of learning experience, increased student experiences and academic performance, simplified administration and creation of immersive learning experiences.

Recommendations

There should be regular training and mentoring of teachers to learn how to use AI tools as well as establishment of professional learning communities where best practices can be shared. Students should be arranged as orientation programmes, technical support should be provided and feedback should be taken frequently. Laws and policies should be put in place by the policymakers to safeguard the privacy of the students, fair access and learning process. The technological developers will need to focus on the development of inclusive, transparent, and responsible AI solutions with substantial defense against prejudice and discrimination.

References

- Adewumi, B. A., and Yusuf, K. T. (2021). Digital Transformation in Nigerian Classrooms: The Role of AI in Enhancing Pedagogical Practices. *Nigerian Journal of Educational Technology*, 8(1), 56-70.
- Akgun, S., & Greenhow, C. (2022). Artificial intelligence in education: Addressing ethical challenges in K-12 settings. *AI and Ethics*, 2(3), 431–440. Retrieved from <https://doi.org/10.1007/s43681-021-00096-7>.
- Bakare, M. I. (2024). Artificial Intelligence and Social Studies Education in Nigeria: A Pathway to Enhanced Learning and Critical Thinking in Nigeria. *International Journal of Creative Research Thoughts (IJCRT)*, Volume 12. Retrieved from www.ijcrt.org.
- Duru, C. S., and Eze, S. C. (2023). Challenges and Prospects of Integrating AI into Nigerian Educational Systems. *African Journal of Educational Research*, 19(2), 75-89.
- Eze, S. C., Chinedu-Eze, V. C. (2022). Artificial Intelligence in African Education: A Nigerian Perspective. *Technology in Society*, 69, 101870.
- George, B. and Wooden, O., (2023). Managing the strategic transformation of higher education through artificial intelligence. *Administrative Sciences*, 13(9), p.196.
- Huang, J. (2021). A review on artificial intelligence in education. *Academic Journal of Interdisciplinary Studies*, 10, 206.
- Ogunleye, A. O., and Odetayo, A. J. (2022). Artificial Intelligence and Educational Reform in Nigeria: Prospects and Challenges. *Journal of Educational Policy and Leadership in Africa*, 4(3), 29-42.
- Paek, S., & Kim, N. (2021). Analysis of worldwide research trends on the impact of artificial intelligence in education. *Sustainability*, 13(14), 7941.
- Rane, N. J. (2023). Education 4.0 and 5.0: Integrating Artificial Intelligence (AI) for personalized and adaptive learning. Available at SSRN 4638365.

- Sugihartono. (2020). Pendidikan Personalisasi dalam Era Kecerdasan Buatan: Kajian Implementasi di Indonesia. *Jurnal Pendidikan dan Teknologi Informasi*, 7(1), 13-22.
- Vincent, L., & Van Der, V. (2020). Trustworthy artificial intelligence (AI) in education: Promises and challenges (OECD Education Working Papers 218; OECD Education Working Papers, Vol. 218). Retrieved from <https://doi.org/10.1787/a6c90fa9-en>