
**ASSESSMENT OF ARTIFICIAL INTELLIGENCE IN
PERSONALIZING LEARNING IN SOCIAL STUDIES
UPPER BASIC SCHOOLS IN EDO STATE**

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Abstract

“This study assessed the use of Artificial Intelligence to customize instruction in Upper Basic Social Studies classes in Edo State, Nigeria. Students' experiences with AI-based learning and the ensuing effects on instructional activities were investigated using two hypotheses and three study questions. Utilizing a research survey design, a total of 49,796 pupils from 49 high schools in Edo State's Upper Basic 2 were involved in the study. “A representative sample of 450 students from the Edo North, Edo South, and Edo Central senatorial districts—230 female and 220 male—was chosen using a multi-stage sampling procedure. Data was gathered using the Artificial Intelligence and Personalized Learning in Social Studies Questionnaire. An expert panel accepted the instrument, which had a Cronbach alpha reliability coefficient of 0.81. Descriptive statistics, independent testing of the sample, and chi-square tests were the analytical techniques employed at the 0.05 level of significance. The findings showed that Upper Basic Social Studies students view AI as a helpful tool for individualized learning. AI-based personalized learning technologies have fundamentally altered pedagogical delivery and assessment. In order to

support customized learning plans and AI-assisted assessment methods, the paper suggests integrating AI-based tools within the Social Studies course.”

Keywords: *Artificial intelligence, Personalized learning, Social Studies, Teaching effectiveness, Assessment practices, Upper Basic Education.*

Introduction

Artificial Intelligence is becoming a high-profile phenomenon in various fields, and education is a field that is proving to be a rich ground. The advances in machine learning, natural language processing, and data analytics have enabled the implementation of AI in educational systems. These developments seem congruent with an international pedagogical trend based on learner-centred practice and enabling inclusivity, engagement, and adaptive teaching. Artificial Intelligence has better capability to recognize pattern of learning. Analysis of data concerning students and study of their behavioural patterns allow AI systems to diagnose their strengths and weaknesses and recommend various instructional methods. This flexibility is essential during a time when numerous school systems are in search of a solution to the inflexible, old-fashioned pedagogies. The development of such technologies will likely affect the process of teaching, curriculum development, and assessment. Social Studies could be individualized by using artificial intelligence.

The above disciplines across social Studies, which include history, geography, civics, and economics, require the formation of various cognitive and analytical abilities (Godabe et al., 2022). These competencies can be improved through AI by modulating content and offering dynamic evaluative tools. The process of learning the Social Studies domain can be made more active and cost-effective with the help of interactive simulation, the use of virtual reality, and tailor-made educational modules. Also, AI can help teachers to detect knowledge gaps and adjust learning by monitoring the development of students in real-time, which

results in the creation of inclusive learning spaces that are responsive to different learning styles and abilities. As a result, AI can enhance the presentation of the material of Social Studies and encourage critical thinking capabilities, problem-solving skills, and civic awareness in students.

Generally, artificial intelligence in the educational field involves cognitive processes, which include learning, reasoning and decision making, as part of intelligent systems. Examples of these include adaptive learning platforms, intelligent tutoring systems and data-driven instructional planning and student success tools. According to Luckin (2017), the collection of data, learning, and informed decision-making are the main educational AI functions that can improve teaching and learning. These systems analyse student behaviour, identify patterns of performance and provide personalized feedback. The need to implement scalable and efficient educational solutions is one of the reasons why an increased interest in AI may be anticipated. According to Holmes et al. (2021), AI might help teachers in grading and tracking students' progress and therefore relieve the instructional load, and the subsequent pedagogical resourcefulness. These tools are able to identify academic issues at an early stage and provide remedial interventions, which can help to shift uniform models to more flexible and customised ones.

Assessment is one area of application of AI that is changing the teaching of Social Studies. Student learning assessments are made more precise, customizable, and fast through AI-powered assessment systems. These systems allow to monitor the development of learners continuously unlike the traditional summative examinations. According to Holmes et al. (2021), AI can be used to objectively grade and provide fast feedback, which will decrease the workload of teachers and provide timely feedback during instructional changes. Baker (2021) notes that AI-based analytics are able to recognize student responses, misunderstandings, and adjust activities to meet the requirements of every student. This adaptable approach underlines formative evaluation and distinguishes teaching at different cognitive levels.

Applying intelligent tutoring systems and data dashboards can help teachers evaluate the level of understanding in the area of Social Studies where interdisciplinary content can help develop critical thinking (Mahmoud & Sorensen, 2024).” Such technologies will increase the effectiveness of evaluation and provide a more personalized learning space. Luckin et al. (2022) suggest that the educational oversight must keep the balance of AI-based assessment and focus on fairness, situational awareness, and ethical concerns. Individualisation in AI requires adaptive learning systems, which modify the content of the instructional delivery in real-time depending on the performance of the learners. These algorithms alter the learning content speed, difficulty, and form to suit the cognitive readiness of learners (Caspari-Sadeghi, 2023). This practice would maintain the interest and provocation among various learners. This effort requires data analytics, which allow AI systems to gather and work with student interaction and assessment results, along with interactions with the environment. The technologies can assist the educators to customize learning channels to personal interests and abilities (Baker, 2021), thus enhancing motivation and learning results.

The following reasons are used in AI applications in Social Studies teaching; Knewton makes history and geography adaptive (Mahmoud and Srensen, 2024), and other systems focus on civic education by analyzing user interactions and suggesting content (Yetiisiensoy & Karaduman, 2024). Google Expeditions with AI provides virtual tours of historical and geographical sites, which are realistic and gather engagement data and provides reports that can be used to improve instruction (Luckin et al., 2022). Individual learning tracks are based on the preferences, needs, and the learning styles of students. These tracks enable the learners to advance at their pace and engage with knowledge according to their modes of choice, unlike the standardized curricula. According to Holmes *et al.* (2021), personalized learning is a concept whereby the content, the delivery, and the timing are adjusted to the needs of each student.

According to Erumit and Çetin (2020), it is a dynamic policy, which modifies the content and teaching according to the results of the evaluation. According to Peng and Spector (2019), learner empowerment implies self-directed and interest-motivated learning with the help of digital tools and teachers. This approach promotes mastery learning, self-regulation, and critical thinking, which are important elements of Social Studies education (Ododo et al., 2024). Individualized learning powered by AI has significant benefits especially in Social Studies. Differentiation instruction that emphasizes on the different learning needs is also beneficial. Kucirkova et al. (2019) observe that this type of customization allows students to be guided in accordance with their speed and understanding, which may help increase engagement and retention.

There are learners who perform well using textual resources and there are those learners who learn better using visual or interactive learning materials. Another consequence is heightened student motivation; when the content is aligned with interest and abilities, it will become more engaging (Celik, 2022). In the Social Studies, this can be in the context of discussing civic themes or issues pertaining to the students in the past thus igniting interest and participation. Independent learning skills are developed in personalized learning and this enables the students to be in control of their learning. Equity can also be achieved through personalized teaching because learning gaps can be resolved by providing personalized interventions. According to Wang (2021), the AI technologies may assist struggling students and put advanced learners to the test. This study assessed the use of AI to customize instruction in Upper Basic Social Studies classes in Edo State, Nigeria. The specific objectives are to:

- i. assess the degree to which Artificial Intelligence enhances personalised learning in Upper Basic 2 Social Studies within Edo State;
- ii. determine the influence of AI-driven personalised learning tools on the effectiveness of teaching in Upper Basic 2 Social Studies within Edo State; and .

- iii. examine the influence of AI-driven personalised learning on evaluation methods in Upper Basic 2 Social Studies within Edo State.

Research Question

The study investigated the following research question.

To what degree does Artificial Intelligence enhance personalised learning in Upper Basic 2 Social Studies in Edo State?

Hypotheses

The significance threshold of 0.05 was used to test the following hypotheses.

1. There is no significant impact of AI-powered personalized learning tools on teaching effectiveness in Upper Basic 2 Social Studies in Edo State.
2. There is no significant impact of AI-driven personalized learning on assessment practices in Upper Basic 2 Social Studies in Edo State.”

Methods

“This research design will provide the researcher with a holistic and representative picture of AI implementation in Edo State natural classroom contexts. As stated by the Edo State Ministry of Education (2024), it was planned to cover 49,796 Upper Basic 2 pupils in the number of the public secondary schools; these learners are spread all over the Edo North, South and Central senatorial constituencies. The sample of 450 of the Upper Basic 2 students which was obtained by means of a multistage sampling protocol comprised the addition of gender and regional representation. First, each of the three senatorial districts was randomly selected to have one local government area (LGA). Thereafter, an Upper Basic school was chosen at random in a LGA that was selected. Lastly, 150 students each were recruited at random in the two institutions and the number of samples constituted 450 students with 230 being female and 220 being male; this brought about gender balance.

The questionnaire used to collect the data was a researcher-created structured questionnaire dubbed Artificial Intelligence and Personalised Learning in Social Studies Questionnaire (AI-PLSSQ). Two scholars who are members of the University of Benin Faculty of Education, Social Studies Education and Measurement and Evaluation, evaluated the questionnaire. They edited some to make them clear, relevant and aligned to the study objectives. The reliability of the instrument was tested with 30 students of a non-sample school in the upper basic 2 level; Cronbach alpha produced an internal consistency coefficient of 0.81. The questionnaire would not be given without express permission of principals of sampled schools. Data collection using the researcher and two qualified assistants was done after the researcher was trained on objectives of the study, the ethical aspects and impartial data collection. Respondents were made aware of the fact that the research was aimed at informed consent and participation. The responses were considered to be anonymous and unidentifiable. The surveys were obtained at the end of the administration to ensure that the data was complete and will not be lost. There was the data analysis incorporating descriptive and inferential statistics. The study used means and standard deviations to characterise central tendencies and t-tests of independence and chi-square at a significance level of 0.05 as a null hypothesis.”

Results

Research Question 1: To what extent does Artificial Intelligence facilitate personalized learning in Upper Basic Social Studies in Edo State?

Table 1: Extent to Which AI Facilitates Personalized Learning

S/N	Questionnaire Items	Mean Score	Standard Deviation	Decision
1	To what extent do AI platforms help you learn Social Studies at your own pace?	3.22	0.66	High Extent
2	AI tools provide learning materials based on your personal needs?	3.15	0.71	High Extent
3	To what extent do AI simulations help you understand Social Studies topics better?	3.08	0.69	High Extent
4	To what extent does AI provide immediate feedback on your Social Studies tasks?	2.92	0.75	Low Extent
5	To what extent does AI recommend extra content when you struggle in a topic?	3.18	0.67	High Extent
6	To what extent does AI help you stay engaged in Social Studies?	2.89	0.76	Low Extent
7	To what extent has AI-based learning increased your confidence in Social Studies?	3.10	0.70	High Extent
Cumulative Mean:		3.08		High Extent

Criterion mean = 3.00

Table 1 shows that students thought AI helped personalise Social Studies instruction. Five of the seven questionnaire items scored above 3.00, indicating excellent agreement. AI supports self-paced learning (M = 3.22), personalised materials (M = 3.15), simulations for understanding (M = 3.08), extra content recommendation (M = 3.18), and learning confidence (M = 3.10). AI's capacity to deliver immediate feedback (M = 2.92) and engage pupils (M = 2.89) fell significantly below the criterion mean, highlighting areas for development. The cumulative mean of 3.08 exceeds the criteria of 3.00, suggesting that students think AI helps personalise Social Studies learning.

Hypothesis 1: There is no significant impact of AI-powered personalized learning tools on teaching effectiveness in Upper Basic 2 Social Studies in Edo State.

Table 2: Chi-square Analysis for the Impact of AI-Powered Personalized Learning Tools on Teaching Effectiveness in Upper Basic Social Studies

Variables	N	df	LS	Crit X ² Value	CalX ² Value	Decision
AI-Powered Personalized Learning Tools	450	2	0.05	5.991	79.314	Rejected
Teaching Effectiveness						

Table 2 shows the Chi-square analysis of AI-powered personalised learning tools on Upper Basic 2 Social Studies teaching efficacy. With 2 degrees of freedom, the estimated Chi-square value of 79.314 is higher than the threshold value of 5.991 at 0.05 significance. Because the estimated value is higher than the crucial value, the null hypothesis is rejected. Edo State's Upper Basic Social Studies education is statistically improved by AI-powered personalized learning tools.

Hypothesis 2: There is no significant impact of AI-driven personalized learning on assessment practices in Upper Basic Social Studies in Edo State.

Variables	N	df	LS	Crit X ² Value	Calc X ² Value	Decision
AI-Driven Personalized Learning	450	2	0.05	5.991	77.604	Rejected
Assessment Practices						

Table 3: Chi-square Analysis for the Impact of AI-Driven Personalized Learning on Assessment Practices in Upper Basic Social Studies

The estimated Chi-square value of 77.604 exceeds the threshold value of 5.991 at 0.05 significance and 2 degrees of freedom, as shown in Table 3. Thus, the null hypothesis that AI-driven personalised learning does not affect Upper Basic Social

Studies assessment methods in Edo State is rejected. This suggests that AI-driven personalised learning affects Edo State Upper Basic Social Studies teachers' evaluation techniques.

Discussions

Findings showed that students in the Edo State believe that artificial intelligence (AI) can tailor the instruction of the Upper Basic Social Studies. These perceptions imply that AI systems can make learning customised to the needs of an individual student and consequently make learning more inclusive and successful. Hwang and Chang (2023) assert that AI-based systems can adjust the content based on the ability, processing speeds and the comprehension of the learners. However, the students complained of decreased satisfaction with the way AI provides timely feedback and the extent of engagement. According to Luckin (2017), the true educational value of AI is that it is able to provide students with timely, immediate feedback and to interact with the student in an interactive manner; thus, even personalised content can become uninteresting to students without any of these functions.

The authors concluded that personalised learning made with the help of AI contributes to a greater effect of instruction. The use of AI tools enabled faster delivery of content by the teachers. Luckin (2017) proposed that AI may be used to enhance pedagogy through real-time change in instruction and at the same time lessen the load on administration. Holmes et al. (2021) agreed that AI can be used to enhance the teaching process through identifying learning gaps and providing a tailored teaching experience, as well as making classrooms more engaging. The evaluation of the Social Studies is also affected by AI-powered personalised learning. In formative and summative assessments, intelligent technologies are becoming a common occurrence in the assessment process. Tapalova and Zhiyenbayeva (2022) state that AI provides the opportunity to conduct continuous assessment, provide immediate feedback, and track individual progress. According to Caspari-Sadeghi (2023), AI-assisted testing helps to improve the accuracy of testing, reduce the effects of human

grading on the assessment, and enable teachers to use evidence-based insights to make decisions. All these studies reveal that AI has the opportunity to make the assessment more accurate and relevant in the educational process.

Conclusion

A research study was done to determine the effects of artificial intelligence in personalised learning in the Upper Basic Social Studies classes in Edo State. According to the respondents, AI provided self-paced learning, provides features of adaptive delivery of content, and increased confidence in learners. Results also showed that educators might use AI to tailor the pedagogical approach, spread instructional resources, and determine the individual student learning requirements. In the sphere of assessment, AI applications allowed systematic review cycles, feedback in a timely way, and making an informed, instructional decision based on data. Still, such limitations as the lack of real-time feedback systems and the ineffectiveness of interaction with students highlight the need to enhance the use of AI. The paper came to a conclusion that the idea of AI-based personalised learning has the potential of making the learning process of Social Studies more approachable, effective, and up to date, though this depends on its further evolution and professional growth.

Recommendations

Arising from the findings of this study, it is recommended that educational authorities in Edo State integrate artificial intelligence (AI) tools into Social Studies education to support individualized learning and enhance students' participation in classroom activities. Educators should also be encouraged to engage in lifelong learning and continuous professional development to build the skills required for the effective use of AI in teaching and assessment processes. As a corollary, investment in AI platforms and web-based educational resources is necessary to provide personalized learning solutions that can provide to the diverse learning needs of students. In addition, developers and

policymakers involved in AI tools for education should prioritize gender-neutral and inclusive design principles to ensure that these technologies address the varied backgrounds and abilities of learners. In conclusion, further studies are recommended to examine the long-term effects of AI-based personalized learning on students' academic achievement across different subject areas and educational levels.

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