**Teachers’ Digital Literacy and the Adoption of Artificial Intelligence in Social Studies Assessment: A Study of Upper Basic Schools in Edo State**

**Abstract**  
*This study investigated teachers’ digital literacy and the adoption of Artificial Intelligence (AI) in Social Studies assessment practices in Upper Basic Schools in Edo State, Nigeria. The study was guided by four research questions and three hypotheses. Adopting a correlational survey research design, the study explored the level of digital literacy among teachers, the extent of AI adoption in assessment, the influence of digital literacy on AI integration, and the challenges encountered during AI adoption. The population consisted of approximately 15,000 Social Studies teachers across Edo State, from which a representative sample of 450 teachers (230 males and 220 females) was selected using a multi-stage sampling technique. Data were collected through a structured, validated, and reliable questionnaire titled “Teachers’ Digital Literacy and AI Adoption in Assessment Questionnaire (TDLAAQ).” Descriptive statistics (mean and standard deviation) and inferential statistics (Independent Samples t-test and Pearson Product Moment Correlation Coefficient) were used to analyze the data at a 0.05 level of significance. Findings revealed that the digital literacy level among teachers was generally inadequate, with male teachers demonstrating higher proficiency than female counterparts. A significant positive relationship was found between teachers’ digital literacy and their adoption of AI tools for assessment. Additionally, infrastructural, policy, and personal barriers were identified as key challenges impeding AI adoption. The study recommends sustained digital training, improved infrastructure, and targeted policy interventions to support AI integration in educational assessment.*

**Keywords**: Digital Literacy, Artificial Intelligence, Social Studies Assessment, Upper Basic Education, Educational Technology Integration

**Introduction**

Digital literacy has evolved from the basic ability to use digital tools to a multifaceted competence involving critical thinking, content creation, communication, and ethical use of technology. Park et al. (2021) describes digital literacy as “the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers.” In educational contexts, digital literacy involves teachers’ capacity to effectively integrate technological tools into instruction, manage digital learning environments, and use digital resources for assessment and feedback (Marín & Castaneda, 2022).

In the 21st-century classroom, digital literacy is foundational for effective teaching and learning. According to Audrin and Audrin (2022), digital literacy enables educators to leverage online content, utilize multimedia tools, and engage students through interactive technologies. However, in many developing countries, including Nigeria, limited access to resources and inadequate training opportunities contribute to low digital literacy levels among teachers (Bello& Ajao, 2024).

This concern is particularly relevant in Social Studies education, where digital tools could enrich learning experiences by enabling simulations, collaborative projects, and real-time assessments.

Artificial Intelligence (AI) in education refers to the application of intelligent systems that mimic human reasoning to enhance learning processes. In assessment practices, AI supports personalized learning, automated grading, adaptive testing, and analytics-driven feedback (Luckin 2017). These tools can improve efficiency, consistency, and scalability in assessment, particularly in subjects like Social Studies that benefit from critical thinking and context-based analysis.

Several studies highlight the growing use of AI in educational settings. Fu et al. (2024)) found that AI-based assessment tools were becoming increasingly prevalent in secondary and tertiary institutions, especially for formative assessments. Similarly, Holmes et al. (2021) argued that AI systems are reshaping how teachers evaluate students, allowing for more nuanced, data-informed decision-making. Despite these advances, the extent of AI adoption in basic education settings remains limited, particularly in sub-Saharan Africa. In Nigeria, factors such as limited infrastructure, low digital literacy, and resistance to change hinder the widespread use of AI in schools (Eke, 2024). In the context of Social Studies education in Edo State, understanding the level of AI integration in assessment practices is essential to identifying current gaps and opportunities.

There is a growing body of literature supporting the connection between digital literacy and the adoption of AI tools in educational assessment. Digital competence is considered a prerequisite for engaging with AI-driven platforms, which often require navigation of complex interfaces, data interpretation, and technological troubleshooting. Teachers who lack foundational digital skills are less likely to adopt innovative technologies in their teaching or assessment practices (Liao et al., 2024). Joseph et al. (2024) emphasized that digital literacy influences not only technical ability but also pedagogical attitudes and willingness to innovate. Teachers proficient in digital tools are better positioned to explore and implement AI-based solutions such as automated essay scoring, student behavior analysis, and adaptive quizzes. In their study, Ervianti et al. (2023) noted that digital competence significantly predicted educators’ confidence and readiness to adopt AI technologies. Nyamboga and Ali (2020) examined how digital literacy strategies influenced academic progress in private universities in Kenya during the COVID-19 pandemic. The study found a positive relationship between e-learning and academic progress, emphasizing the need for all universities to adopt digital platforms for continuity in education. The authors recommend nationwide implementation of digital literacy to ensure academic resilience.

Moreover, gender and generational factors seems to mediate the relationship between digital literacy and technology adoption. Research by Dringó-Horváth et al. (2025) revealed that male teachers and younger educators tend to show higher digital competence and are more likely to experiment with AI tools. This suggests that targeted capacity-building programmes may be necessary to ensure equitable adoption across teacher demographics. Despite the transformative potential of AI in education, several systemic and individual challenges inhibit its effective integration. Abedi and Ackah-Jnr (2023) categorized these challenges into first-order barriers (external) and second-order barriers (internal). According to them, First-order barriers include inadequate infrastructure, lack of access to digital tools, unreliable internet, and insufficient funding. In contrast, second-order barriers involve teachers’ beliefs, resistance to change, fear of job replacement, and limited digital skills. In the Nigerian educational context, many of these barriers are prevalent. According to Oshowole (2024), infrastructural limitations, inconsistent electricity supply, and minimal government support undermine technology adoption in public schools. Teachers often operate in environments where AI tools are either unavailable or impractical due to poor technical support and training gaps. Furthermore, policy misalignment and lack of strategic frameworks for AI integration also pose significant challenges. Holmes et al. (2021) argue that for AI to be adopted meaningfully in education, stakeholders must ensure data privacy, ethical compliance, and professional development tailored to the needs of local educators. In the absence of these supports, AI remains an underutilized innovation in basic education systems like those in Edo State.

The reviewed literature underscores the critical role of digital literacy in shaping teachers' readiness and capacity to adopt AI in assessment practices. While AI offers promising opportunities for enhancing Social Studies assessment, its implementation is contingent upon teachers' digital competence, systemic support, and removal of contextual barriers. As such, this study contributes to the growing discourse on technology integration in education by focusing on the interplay between digital literacy and AI adoption in a specific Nigerian context. Addressing the identified gaps could lead to more inclusive, efficient, and data-driven assessment practices in Social Studies classrooms.

**Objectives of the Study**

The study was guided by the following research objectives:

1. examine the level of digital literacy among Social Studies teachers in Upper Basic Schools in Edo State.
2. assess the extent to which Artificial Intelligence is adopted in Social Studies assessment practices in Upper Basic Schools in Edo State.
3. determine the influence of teachers’ digital literacy on adoption of Artificial Intelligence in assessment practices in Upper Basic Schools inEdo State.
4. identify the challenges Social Studies teachers face in adopting Artificial Intelligence for assessment in Upper Basic Schools in Edo State

### ****Research Questions****

### **The following research questions were answered in the study.**

1. **What is the level of digital literacy among Social Studies teachers in Upper Basic Schools in Edo State?**
2. **To what extent is Artificial Intelligence adopted in Social Studies assessment practices in Upper Basic Schools in Edo State?**
3. **How does teachers’ digital literacy influence the adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State?**
4. **What challenges do Social Studies teachers face in adopting Artificial Intelligence for assessment in Upper Basic Schools in Edo State?**

**Hypotheses**

**The following hypotheses were tested at 0.05 level of significance.**

**H01: There is no significant difference in the level of digital literacy between male and female Social Studies teachers in Upper Basic Schools in Edo State?**

**H02: There is no significant relationship between Social Studies teachers’ level of digital literacy and the adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State.**

**H03: There is no significant relationship between the challenges faced by Social Studies teachers and adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State.**

**Methodology**

This study adopted a correlational survey research design, which was deemed appropriate for investigating the relationships between teachers’ digital literacy, the adoption of Artificial Intelligence (AI), and the challenges associated with integrating AI into Social Studies assessment practices in Upper Basic Schools in Edo State. The design allowed for the observation and analysis of naturally occurring variables without manipulation and facilitated conclusions based on the relationships observed within a large population of teachers.

The target population for this study comprised all Social Studies teachers teaching at the Upper Basic School level (Basic 7 to Basic 9) in public schools across Edo State. According to statistics from the Edo State Ministry of Education (2024), there are approximately 15,000 teachers serving at this level, distributed across the three senatorial districts of Edo North, Edo Central, and Edo South.A sample of 450 teachers was drawn using a multi-stage sampling technique designed to ensure adequate regional and demographic representation. At the first stage of selection, one Local Government Area (LGA) was randomly selected from each senatorial district. In the next stage, five public Upper Basic Schools were randomly selected from each of the three LGAs. Finally, 30 Social Studies teachers were randomly selected from the schools in each LGA, making a total sample size of 450 respondents. The sample consisted of 230 male and 220 female teachers, ensuring gender balance within the study population.

Data collection was carried out using a structured, researcher-developed questionnaire titled “Teachers’ Digital Literacy and AI Adoption in Assessment Questionnaire (TDLAAQ).” The questionnaire was divided into two major sections. Section A gathered demographic information from the respondents, including gender, senatorial location, and teaching experience. Section B focused on the core constructs of the study, addressing teachers’ digital literacy, the extent to which AI tools were being adopted in Social Studies assessment, the perceived influence of digital competence on the adoption of AI tools, and the challenges associated with AI integration into assessment practices. All items in the questionnaire were rated on a four-point Likert scale. For items seeking to measure the degree of agreement, the scale consisted of Strongly Agree, Agree, Disagree, and Strongly Disagree, coded respectively as 4, 3, 2, and 1. For items assessing frequency or extent, the scale was composed of High Extent, Moderate Extent, Low Extent, and Very low Extent, also scored as 4, 3, 2, and 1 respectively.

To ensure the validity of the instrument, the first draft of the questionnaire was subjected to expert review. Three specialists in Social Studies Education and Measurement and Evaluation from the University of Benin examined the questionnaire for content relevance, clarity, and alignment with the research objectives. Based on their feedback, the instrument was refined to enhance precision and construct validity. A pilot study was subsequently conducted using 30 Social Studies teachers drawn from public schools not included in the final sample. The internal consistency of the instrument was tested using the Cronbach Alpha method, yielding a reliability coefficient of 0.84, which was considered statistically acceptable for the purposes of this research. Before the commencement of data collection, ethical approval and administrative consent were obtained from the Edo State Ministry of Education and the principals of the selected schools. The participation of teachers was entirely voluntary, and all respondents were assured of anonymity and the confidentiality of their responses. Data collection was carried out by the researcher alongside two trained research assistants who were properly briefed on the ethical considerations and unbiased administration procedures required for the study.

The completed questionnaires were collected on the spot to ensure high return rates and to verify completeness. The data gathered were analyzed using both descriptive and inferential statistical methods. Descriptive statistics, particularly mean scores and standard deviations, were employed to answer the research questions. Inferential statistics, specifically the Independent Samples t-test and Pearson’s Product Moment Correlation Coefficient (PPMCC), were used to test the study’s hypotheses. All statistical analyses were conducted at the 0.05 level of significance, using the Statistical Package for the Social Sciences (SPSS) version 23. Through this methodological framework, the study provided a robust analysis of how teachers’ digital literacy influences the adoption of Artificial Intelligence in assessment practices in Social Studies classrooms, as well as the constraints that hinder effective implementation across public Upper Basic Schools in Edo State.

**Demographic Data**

The demographic data in the study was categorized according to the three senatorial districts in Edo State.

**Table 1: Demographic Data According to Senatorial Districts in Edo State**

| **Senatorial District** | **Number** | **Percentage (%)** |
| --- | --- | --- |
| Edo North | 5,100 | 34.0 |
| Edo Central | 4,800 | 32.0 |
| Edo South | 5,100 | 34.0 |
| **Total** | 15,000 | 100.0 |

Table 1 presents the demographic distribution of Upper Basic teachers across the three senatorial districts in Edo State. Out of a total of 15,000 teachers, Edo North and Edo South each had 5,100 teachers (34.0%), while Edo Central had 4,800 teachers (32.0%).

**Research Question 1**

What is the level of digital literacy among Social Studies teachers in Upper Basic Schools in Edo State?

**Table 2: Mean Score of Teachers on Level of Digital Literacy**

| **S/N** | **Questionnaire Items** | **Mean Score** | **Standard Deviation** | **Decision** |
| --- | --- | --- | --- | --- |
| 1 | Effective use digital tools (e.g., MS Word, Excel, PowerPoint) for teaching. | 2.45 | 0.54 | Low |
| 2 | Operation of online platforms such as Google Classroom or Zoom for teaching. | 2.38 | 0.58 | Low |
| 3 | Ability to troubleshoot basic digital device issues without assistance. | 2.30 | 0.51 | Low |
| 4 | Frequency in of use email and cloud services for academic tasks. | 2.42 | 0.56 | Low |
| 5 | Possess of skills in using educational software and multimedia tools. | 2.36 | 0.53 | Low |
|  | **Cumulative Mean** | **2.38** | **—** | **Low** |

Criterion Mean = 3.00

**Table 2** presents the responses of teachers on their level of digital literacy. The results show that all items recorded mean scores below the criterion mean of 3.00. For instance, “I can effectively use digital tools (e.g., MS Word, Excel, PowerPoint) for teaching” had a mean score of 2.45, while “I can operate online platforms such as Google Classroom or Zoom for teaching” had a mean of 2.38. Similarly, “I can troubleshoot basic digital device issues without assistance” (Mean = 2.30), and “I possess skills in using educational software and multimedia tools” (Mean = 2.36) also fell below the benchmark. With a cumulative mean of 2.38, the result indicates a generally low level of digital literacy among Social Studies teachers in Upper Basic Schools in Edo State.

**Research Question 2**

To what extent is Artificial Intelligence adopted in Social Studies assessment practices in Upper Basic Schools in Edo State?

**Table 3: Mean Score on AI Adoption in Assessment Practices**

| **S/N** | **Questionnaire Items** | **Mean Score** | **Standard Deviation** | **Decision** |
| --- | --- | --- | --- | --- |
| 1 | Use of AI tools to generate test or exam questions. | 2.83 | 0.74 | Low |
| 2 | AI-powered grading tools are used to mark students' assessments. | 2.75 | 0.71 | Low |
| 3 | Use of AI to analyze students' learning patterns and progress. | 2.66 | 0.70 | Low |
| 4 | School encouragement of AI integration in assessment procedures. | 2.90 | 0.69 | Low |
| 5 | Use of AI applications to provide personalized feedback to students. | 2.79 | 0.73 | Low |
|  | **Cumulative Mean** | **2.79** | **—** | **Low** |

**Criterion Mean = 3.00**

The results in **Table 3** reveal that the extent of AI adoption in assessment practices is low. All the items yielded mean scores below the criterion mean of 3.00. Notably, “I use AI tools to generate test or exam questions” had a mean of 2.83, “AI-powered grading tools are used to mark students' assessments” recorded a mean of 2.75, and “I use AI to analyze students' learning patterns and progress” had the lowest score at 2.66. The highest rated item, “My school encourages AI integration in assessment procedures,” still scored only 2.90. With a cumulative mean of 2.79, the findings suggest that AI is not yet widely adopted in Social Studies assessment practices in Upper Basic Schools in Edo State.

**Research Question 3**

How does teachers’ digital literacy influence the adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State?

**Table 4: Mean Score on Influence of Digital Literacy on AI Adoption**

| **S/N** | **Questionnaire Items** | **Mean Score** | **Standard Deviation** | **Decision** |
| --- | --- | --- | --- | --- |
| 1 | Teachers with strong digital skills are more likely to adopt AI for assessment. | 3.25 | 0.64 | Agree |
| 2 | My digital skills motivate me to explore AI tools for educational use. | 3.12 | 0.66 | Agree |
| 3 | Lack of digital literacy reduces willingness to integrate AI. | 3.28 | 0.61 | Agree |
| 4 | Teachers' competence in digital tools influences AI adoption rates. | 3.31 | 0.59 | Agree |
| 5 | Digital training improves teachers’ readiness to adopt AI. | 3.40 | 0.57 | Agree |
|  | **Cumulative Mean** | **3.27** | **—** | **Agree** |

Criterion Mean = 3.00

**Table 4** shows that respondents generally agreed that teachers’ digital literacy influences the adoption of AI in assessment. All items had mean scores above the criterion mean of 3.00. For example, “Teachers with strong digital skills are more likely to adopt AI for assessment” recorded a mean of 3.25, and “Teachers' competence in digital tools influences AI adoption rates” scored 3.31. Additionally, “Digital training improves teachers’ readiness to adopt AI” had the highest mean of 3.40. With a cumulative mean of 3.27, the result indicates that teachers' level of digital literacy significantly influences their willingness and capacity to adopt AI tools in assessment practices.

**Research Question 4**

What challenges do Social Studies teachers face in adopting Artificial Intelligence for assessment in Upper Basic Schools in Edo State?

**Table 5: Mean Score on Challenges in Adopting AI for Assessment**

| **S/N** | **Questionnaire Items** | **Mean Score** | **Standard Deviation** | **Decision** |
| --- | --- | --- | --- | --- |
| 1 | Lack of access to AI tools limits adoption in assessment. | 3.22 | 0.69 | Agree |
| 2 | Inadequate training on AI use hinders its application. | 3.35 | 0.64 | Agree |
| 3 | Poor infrastructure (internet, power) affects AI usage. | 3.41 | 0.61 | Agree |
| 4 | Resistance to technological change among teachers affects adoption. | 3.30 | 0.66 | Agree |
| 5 | Lack of institutional policy on AI use limits implementation. | 3.27 | 0.68 | Agree |
|  | **Cumulative Mean** | **3.31** | — | **Agree** |

**Criterion Mean = 3.00**

According to the data in **Table 5,** teachers face several significant challenges in adopting AI for assessment. All items were rated above the criterion mean of 3.00, indicating agreement. For instance, “Poor infrastructure (internet, power) affects AI usage” received the highest mean score of 3.41, while “Inadequate training on AI use hinders its application” scored 3.35. “Resistance to technological change among teachers affects adoption” and “Lack of institutional policy on AI use” also scored high, with means of 3.30 and 3.27 respectively. The cumulative mean of 3.31 implies that substantial challenges hinder the successful integration of AI into assessment practices in Social Studies classrooms in Edo State.

**Hypothesis 1**

There is no significant difference in the level of digital literacy between male and female Social Studies teachers in Upper Basic Schools in Edo State.

**Table 6: Summary of Independent Samples t-test Statistics on Digital Literacy by Gender**

| **Gender** | **N** | **Mean** | **Std. Dev** | **Df** | **t-cal** | **p-value** | **Decision** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Male | 230 | 69.42 | 8.71 |  |  |  |  |
| Female | 220 | 67.31 | 9.14 | 448 | 2.107 | 0.035 | H₀₁ Rejected |

Results of the independent samples t-test statistics in Table 6 indicate that there is a significant difference in the level of digital literacy between male and female Social Studies teachers in Upper Basic Schools in Edo State. This conclusion is drawn from the calculated p-value of 0.035, which is less than the 0.05 alpha level of significance at a degree of freedom (Df) of 448. The mean digital literacy score for male teachers was 69.42, while that of female teachers was 67.31. Therefore, the null hypothesis, which states that there is no significant difference in digital literacy between the two groups, is rejected. This suggests that gender has a statistically significant influence on teachers’ digital literacy levels.

### ****Hypothesis 2****

**There is no significant relationship between Social Studies teachers’ level of digital literacy and the adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State.**

**Table 7: Pearson r on use teachers’ level of digital literacy and the adoption of Artificial Intelligence in assessment practices**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **level of digital literacy** | **AI in assessment practices** |
| **level of digital literacy** | Pearson Correlation | 1 | .347 |
| Sig. (2-tailed) |  | .032 |
| N | 450 | 450 |
| **Artificial Intelligence in assessment practices** | Pearson Correlation | .347 | 1 |
| Sig. (2-tailed) | .032 |  |
| N | 450 | 450 |

Table 7 shows the results of a Pearson correlation analysis between **teachers’ level of digital literacy** and the **adoption of Artificial Intelligence in assessment practices**. The Pearson correlation coefficient (r) between these two variables is **.347**, indicating a **moderate positive correlation**. The significance value (Sig. 2-tailed) is **.032**, which is **less than the 0.05** level of significance. This means that the correlation is **statistically significant**. Therefore, there is a significant relationship between teachers’ digital literacy and the adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State. Consequently, the **null hypothesis is rejected**.

### ****Hypothesis 3****

**There is no significant relationship between the challenges faced by Social Studies teachers and adoption of Artificial Intelligence in assessment practices in Upper Basic Schools in Edo State.**

**Table 8: Pearson r on challenges faced by Social Studies teachers and adoption of Artificial Intelligence in assessment practices**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Teachers challenges adoption of **AI** | **Assessment practices** |
| Teachers challenges adoption of **AI** | Pearson Correlation | 1 | .350 |
| Sig. (2-tailed) |  | .039 |
| N | 450 | 450 |
| **Assessment practices** | Pearson Correlation | .350 | 1 |
| Sig. (2-tailed) | .039 |  |
| N | 450 | 450 |

Table 8 presents the results of a Pearson correlation analysis between the challenges faced by Social Studies teachers and the adoption of Artificial Intelligence in assessment practices. The Pearson correlation coefficient (r) is .350, indicating a moderate positive correlation between the two variables. The significance value (Sig. 2-tailed) is .039, which is less than the 0.05 level of significance. This indicates that the correlation is statistically significant. Therefore, there is a significant relationship between the challenges teachers face and their adoption of Artificial Intelligence in assessment practices. As a result, the null hypothesis is rejected.

**Discussion of Findings**

The findings of this study indicate that the level of digital literacy among Social Studies teachers in Upper Basic Schools in Edo State is generally inadequate. Responses revealed limited proficiency in using basic productivity tools, managing online teaching platforms, addressing simple technical problems, and integrating educational software into instructional practices. Overall, teachers displayed insufficient competence in essential digital skills required for effective technology integration in both teaching and assessment. This result is consistent with the observations of Zabun (2022), who reported that teachers in many developing contexts often face challenges in acquiring digital literacy due to a lack of professional development opportunities, insufficient access to technology, and infrastructural deficits. Similarly, Imhanyehor (2022) highlighted that the successful integration of digital tools in educational settings is largely dependent on the digital capacity of teachers—a condition still lacking in many parts of Nigeria. These findings highlight a critical gap that needs urgent attention if Social Studies instruction is to benefit from digital transformation.

The study also revealed noticeable differences in digital literacy between male and female teachers, with male teachers demonstrating greater confidence and skill in using digital technologies. This aligns with the findings of Adeoye (2023), who emphasized that gender disparities in digital competence are more pronounced in contexts where access and exposure to technology are unequally distributed. Likewise, Rizal et al. (2021) noted that male teachers often show a greater willingness to experiment with new technologies and participate in informal tech-related learning. These gender-based discrepancies point to the need for targeted interventions that ensure equitable access to digital training for all teachers, regardless of gender.

Moreover, the study established that teachers with higher digital literacy are more inclined to adopt Artificial Intelligence in their assessment practices. This confirms the assertion by Zhang and Zhang (2024) that digital fluency serves as a key enabler for the adoption of AI in educational contexts. Teachers who are digitally competent are more comfortable experimenting with AI-powered tools such as automated grading systems and learning analytics platforms et al. (2024) further argue that digital literacy is essential not just for operational knowledge, but also for understanding the ethical implications of AI in education. Hence, capacity building in digital literacy remains fundamental to successful AI integration in Social Studies classrooms.

Finally, the study highlighted a relationship between the challenges faced by teachers and the extent of AI adoption in assessment practices. Teachers reported facing numerous obstacles, including inadequate infrastructure, lack of training, limited policy support, and skepticism towards AI. These barriers negatively influenced their willingness and ability to embrace AI-driven assessment methods. This outcome supports Abedi and Ackah-Jnr (2023) who opined that first- and second-order barriers, which differentiates between external factors (like infrastructure) and internal factors (such as beliefs or resistance to change) that hinder technology integration. In the Nigerian context, Oshowole (2024) also pointed to persistent systemic constraints, such as unreliable internet, poor technical support, and insufficient incentives, as deterrents to digital innovation in schools.

**Conclusion**

This study has underscored the critical importance of digital literacy in the effective adoption of Artificial Intelligence (AI) for assessment in Social Studies classrooms in Upper Basic Schools in Edo State. The findings revealed that many teachers lack essential digital competencies, particularly in operating productivity tools, using online platforms, and troubleshooting technical issues—factors that limit their ability to integrate AI into assessment practices effectively. Gender disparities were also evident, with male teachers exhibiting relatively higher levels of digital proficiency than their female counterparts. Furthermore, a positive relationship was established between digital literacy and the adoption of AI, highlighting that more digitally literate teachers are more inclined to use AI-driven tools for assessment. Conversely, significant challenges—both infrastructural and psychological—were found to negatively impact AI adoption. These insights point to the urgent need for systemic interventions aimed at improving teachers' digital skills and removing barriers to AI integration in educational settings.

**Recommendations**

Based on the findings of the study, the following recommendations were made:

1. Regular, hands-on digital literacy training programs should be organized for Social Studies teachers to enhance their ability to use digital tools and AI platforms for teaching and assessment.
2. Gender-sensitive approaches should be adopted in training initiatives to ensure equitable access and participation of both male and female teachers.
3. Government and school management should invest in the necessary infrastructure—such as stable internet, functional computers, and updated software—to support AI adoption in schools.
4. Professional development workshops should include modules on the ethical use of AI in education, covering topics such as data privacy, fairness, and transparency.
5. Mentorship and peer support systems should be established to encourage teachers with lower digital confidence to learn from more experienced colleagues.

**Limitations of the Study:**

This study was limited to Social Studies teachers in Upper Basic Schools within Edo State, which may affect the generalizability of the findings to other subjects, educational levels, or geographic regions. The reliance on self-reported data through questionnaires might have introduced bias due to social desirability or misinterpretation of items. Additionally, the study did not incorporate qualitative data (e.g., interviews or classroom observations), which could have provided deeper insights into teachers’ experiences with AI adoption. Technological changes and policy updates after data collection may also affect the relevance of the results over time.

**Suggestions for Further Study:**

Future research could expand to other subject areas and states to enhance generalizability across Nigeria’s education system. A mixed-methods approach incorporating interviews or focus groups is recommended to capture teachers’ lived experiences and contextual nuances surrounding AI adoption. Longitudinal studies could assess the sustained impact of digital literacy training on AI integration. Finally, examining the role of institutional support and policy frameworks would provide valuable insights into scaling AI adoption in basic education.

Disclaimer (Artificial intelligence)

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

Option 2:

Author(s) hereby declare that generative AI technologies such as Large Language Models, etc. have been used during the writing or editing of manuscripts. This explanation will include the name, version, model, and source of the generative AI technology and as well as all input prompts provided to the generative AI technology

Details of the AI usage are given below:

1.

2.

3.

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