

## **AN ASSESSMENT OF THE CHALLENGES ASSOCIATED WITH THE USE OF ARTIFICIAL INTELLIGENCE (A.I) IN HISTORY TEACHING IN BAYELSA STATE**

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### **Abstract**

The integration of Artificial Intelligence (AI) into educational systems presents transformative potential, yet its adoption is fraught with context-specific challenges. This study assessed the challenges associated with the use of Artificial Intelligence in History teaching in Bayelsa State, Nigeria. As a discipline rooted in narrative, interpretation, and critical analysis, History education faces unique hurdles in the digital transition. The primary objective of this research was to identify the technological, pedagogical, and perceptual barriers hindering the effective integration of AI tools in secondary school History classrooms. This study employed data from both primary and secondary sources, and equally adopted the use of the Technology Acceptance Model (TAM) as template for analysis. The findings revealed a significant gap between the theoretical benefits of AI and its practical application. Key challenges identified included a critical deficit in digital infrastructure, characterized by unreliable electricity and internet connectivity, particularly in riverine areas. Furthermore, the study showed that a substantial lack of AI literacy and pedagogical training among History educators was evident, fostering skepticism and resistance to technological adoption. The study also found a lack of context-specific AI tools designed for the Nigerian History curriculum, raising concerns about cultural relevance and historical accuracy. The study established that without targeted intervention, the digital divide may exacerbate educational inequalities, depriving students in Bayelsa State of innovative and engaging methods of historical inquiry. The study recommended for institutional capacity building and teacher training, improvement of digital infrastructure in schools, development of localized and context-sensitive AI content, and the establishment of regulatory and ethical frameworks. It concluded that the deployment of Artificial Intelligence in history teaching in Bayelsa State presents significant structural, pedagogical, and ethical challenges that constrain its optimal utilization. However, if the state must achieve its desired outcomes, then, investment in technology driven education is the way to go.

***Keywords: Artificial Intelligence, Technology, Bayelsa State, Discipline, Historical Inquiry***

### **Introduction**

The 21<sup>st</sup> century educational landscape is undergoing a profound transformation, driven by the rapid integration of digital technologies, with Artificial Intelligence (A.I.) emerging as a particularly disruptive and promising force. From personalized learning platforms to intelligent tutoring systems, A.I. offers unprecedented opportunities to revolutionize pedagogical practices across various disciplines (Holmes et al., 2019). In the field of history education, proponents argue that A.I. can move teaching beyond the mere rote memorization of dates and events, instead fostering critical thinking through interactive simulations, personalized explorations of primary sources, and the data-driven analysis of historical narratives (Luckin et al., 2016). However, the implementation of such advanced technology is not without its challenges. The successful adoption of A.I. in education is contingent upon a complex interplay of infrastructural readiness, teacher

capacity, socio-cultural contexts, and policy frameworks (UNESCO, 2021). This is particularly true in regions that may already be grappling with significant educational and developmental deficits.

Bayelsa State, located in the Niger Delta region of Nigeria, presents a unique and compelling case study for examining these challenges. Despite being an oil-rich state, it faces severe infrastructural deficits, including unreliable electricity supply and limited internet connectivity, which are fundamental prerequisites for any technology-driven educational initiative (Nwabueze & Ozioko, 2021). The state's educational system contends with issues such as overcrowded classrooms, a shortage of qualified teachers, and a lack of basic teaching resources, particularly in its rural riverine areas (Adebayo, 2020; Koko, 2025). Introducing A.I. into history classrooms in this context is not simply a matter of procuring software; it requires navigating a labyrinth of pre-existing structural and human capacity problems. The pedagogical shift required—from traditional, teacher-centered instruction to a technology-facilitated, student-centered approach—demands a level of digital literacy and pedagogical reorientation that many history teachers in the region may not currently possess (Ertmer & Ottenbreit-Leftwich, 2010).

Furthermore, beyond the tangible infrastructural and training deficits, there are profound socio-cultural and epistemological challenges. History, as a subject, is often deeply intertwined with cultural identity, collective memory, and political narratives (Lowenthal, 2015). In a region like the Niger Delta, with its rich and complex pre-colonial past and its contentious post-colonial history, the interpretation of historical events is a sensitive matter. The deployment of A.I. tools, which are often developed in Western contexts with algorithms trained on non-African data, raises critical questions about historical accuracy, cultural bias, and the potential for the technology to perpetuate dominant or foreign narratives while marginalizing local perspectives (Noble, 2018). An over-reliance on A.I.-generated content could risk decontextualizing local history, stripping it of its oral traditions and community-specific interpretations that are central to its understanding in Bayelsa. Therefore, this study seeks to conduct a comprehensive assessment of the multifaceted challenges—infrastructural, pedagogical, and socio-cultural—that impede the effective use of Artificial Intelligence in teaching history within Bayelsa State, with the aim of providing a nuanced understanding that can inform policy and practice in similar developing contexts.

### **Statement of the Problem**

The integration of Artificial Intelligence (AI) into history teaching is increasingly promoted as a strategy for improving instructional delivery, learner engagement, and research efficiency. However, in Bayelsa State, the practical adoption of AI in history classrooms faces significant challenges. These include inadequate digital infrastructure, erratic power supply, limited internet connectivity, insufficient funding, and low digital literacy among teachers and students. Additionally, concerns over academic integrity, data privacy, and the potential erosion of critical historical analysis further complicate its usage. Despite policy enthusiasm for educational technology, there is limited empirical assessment of these constraints and their implications for effective history teaching in Bayelsa State, hence the need for this study.

### **Methodology**

This study adopted a qualitative research design to examine the challenges associated with the use of Artificial Intelligence (A.I.) in history teaching in Bayelsa State. Data was collected mainly through primary and secondary sources. The primary data includes; oral interviews, and focus group discussions with history teachers, school administrators, and selected students in public and private secondary schools across the state, while secondary data were derived from textbooks, articles, magazines, etc.

## **Definition of Term Artificial Intelligence**

Artificial Intelligence (AI) refers to the branch of computer science concerned with the design and development of systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, problem-solving, perception, and language understanding. According to John McCarthy, who coined the term in 1956, AI is “the science and engineering of making intelligent machines.” Stuart Russell and Peter Norvig define AI as the study of agents that perceive their environment and take actions to maximize goal achievement (Russell & Norvig, 2021).

## **Theoretical Framework Technology Acceptance Model (TAM)**

The Technology Acceptance Model (TAM) was originally proposed by Fred D. Davis (1989) and later extended by Viswanath Venkatesh and Davis (2000) to explain users’ acceptance of technology. TAM posits that Perceived Usefulness (PU) — the degree to which a user believes technology enhances job performance — and Perceived Ease of Use (PEOU) — the degree to which a user believes technology is free of effort — are the core determinants of technology adoption (Davis, 1989; Venkatesh & Davis, 2000). These constructs influence attitude toward use, which in turn affects behavioral intention and actual use of the technology. In the context of this study, TAM helps explain why educators may resist or embrace AI tools. If teachers perceive AI as beneficial for enhancing instructional quality (high PU), they are more likely to integrate it. Conversely, if AI platforms are seen as complex or difficult to operate (low PEOU), resistance increases — even where benefits exist. Challenges such as inadequate training, limited infrastructure, and unfamiliarity with AI applications negatively shape PU and PEOU, reducing acceptance among history teachers. Thus, TAM illustrates how perceptions shape the adoption of AI in education (Davis, 1989; Venkatesh & Davis, 2000).

## **Historical Background of Artificial Intelligence in Bayelsa State**

The foundational period of AI awareness in Bayelsa State can be traced to the late 1990s and early 2000s, coinciding with the establishment of tertiary institutions offering computer science and engineering programs. The Niger Delta University (NDU) in Wilberforce Island, founded in 2000, emerged as the primary catalyst for introducing computational thinking and artificial intelligence concepts to the state's intellectual landscape (Ebie & Freeman, 2019). During this nascent stage, AI education remained largely theoretical, confined to classroom discussions about expert systems and basic machine learning concepts, with minimal practical implementation due to infrastructural limitations, including unreliable electricity supply and limited internet connectivity that plagued the region during this period (Timiye, 2025).

The transformation from theoretical knowledge to practical application gained momentum around 2010, following significant improvements in telecommunications infrastructure and the expansion of 3G networks across the state. This technological leap enabled researchers at Bayelsa's tertiary institutions to begin exploring AI applications relevant to the region's peculiar challenges (Williams & Briggs, 2020). Notably, the Nigeria Liquefied Natural Gas (NLNG) Company's operations in the state provided early use cases for AI-powered monitoring systems, though these remained primarily corporate-controlled technologies with limited knowledge transfer to local institutions. During this period, the Bayelsa State Government, through the Ministry of Science and Technology, initiated preliminary discussions about technology adoption, though AI remained peripheral to mainstream policy considerations (Davies, 2021; Keme, 2025).

The most significant acceleration in Bayelsa's AI journey occurred between 2015 and 2020, driven by a convergence of factors including the federal government's National Digital Economy Policy, increased private sector interest in Niger Delta technology talent, and the emergence of tech hubs in Yenagoa, the state capital (Okpara & Nwachukwu, 2022). Organizations such as the Bayelsa

State Information Technology and E-Governance Agency initiated pilot projects incorporating AI elements, while local startups began exploring applications in areas such as flood prediction (crucial for a riverine state), agricultural optimization for local crops, and environmental monitoring systems designed to detect and predict oil spill impacts (Etebu & Briggs-Jude, 2020).

The contemporary period, from 2020 to the present, has witnessed a more structured approach to AI development in Bayelsa State. The establishment of the Bayelsa State Innovation Hub in partnership with private technology firms has created physical infrastructure for AI experimentation and talent development (Oyedele & Momodu, 2023; Timiye, 2025). Academic institutions have progressively integrated AI courses into their curricula, while postgraduate research has increasingly focused on developing indigenous AI solutions for regional challenges. Furthermore, partnerships with international development organizations have facilitated knowledge transfer and exposed Bayelsa's technology ecosystem to global AI trends and methodologies. Despite these advances, significant challenges persist, including persistent infrastructural gaps, the need for more robust data collection mechanisms, and the imperative to develop AI applications that address the unique linguistic and cultural context of the Ijaw people who constitute the majority of the state's population (Niger Delta Development Commission Report, 2022)

### **Digital Literacy and Technical Competence of History Teachers in Utilizing AI-Driven Instructional Technologies in Bayelsa State**

The current landscape of history education in Bayelsa State is shaped by a confluence of factors, including infrastructural deficits, limited access to professional development, and a curriculum that may not yet fully reflect the digital age. While the Bayelsa State Government, like others in Nigeria, has made strides in promoting ICT in education through policies and initiatives, the focus has often been on providing hardware rather than cultivating the nuanced digital competencies required for subject-specific integration, particularly in the humanities (Adu & Olatundun, 2019). For a history teacher, technical competence means not just knowing how to operate a projector or a computer, but mastering the use of specialized software. This could include employing AI-driven research tools like [Iris.ai](#) to help students map academic papers related to the Niger Delta's colonial history, or using platforms that allow for the creation of immersive, interactive story maps that trace the migration patterns of the Ijaw people. The absence of this specific, application-oriented competence means that expensive technological investments may be underutilized, used merely as digital substitutes for traditional methods rather than as catalysts for deeper historical inquiry and engagement (Mishra & Koehler, 2006; Keme, 2025).

Furthermore, the unique nature of historical study demands a sophisticated level of digital literacy from teachers. History is an interpretive discipline, and the rise of AI introduces new complexities regarding source verification and historical narrative. AI-powered content generators, such as large language models, can produce convincing but potentially inaccurate or biased historical summaries. A digitally literate history teacher in Bayelsa must possess the critical skills to deconstruct AI-generated narratives, guiding students to question the origin, perspective, and potential biases embedded in algorithmically produced information (Tamuno, 2025). They must be able to teach students how to use AI as a tool for historical thinking—for example, by comparing AI-generated accounts of the Nigerian Civil War with primary source documents from local archives or oral histories from community elders. This competency transforms the history classroom from a space of passive reception to one of active, critical inquiry, where students learn to interrogate the past using both traditional and cutting-edge methods (Wineburg, McGrew, Breakstone, & Ortega, 2016). This is particularly crucial in a region like Bayelsa, where local history and oral traditions are paramount, and the ability to critically engage with digital and AI-generated content can empower students to tell their own stories in a globally connected world.

## **Challenges Associated with the use of AI in History Teaching in Bayelsa State**

The integration of Artificial Intelligence (AI) in education has gained momentum globally, yet its implementation in history teaching within Bayelsa State faces several significant challenges. These challenges include:

### **Inadequate Technological Infrastructure**

The foremost challenge confronting AI integration in Bayelsa State's history classrooms is the severe deficit in technological infrastructure. Many schools lack basic facilities such as reliable electricity supply, internet connectivity, and digital devices necessary for AI-powered learning tools (Eze et al., 2018; Koko, 2025). According to Okwori and Ede (2020), only 23% of secondary schools in the Niger Delta region, including Bayelsa State, have functional computer laboratories. This infrastructural gap creates a digital divide that prevents equitable access to AI-enhanced history teaching resources. Without consistent power supply and broadband internet, even the most sophisticated AI applications become impractical, leaving teachers unable to utilize interactive historical simulations, virtual museum tours, or AI-driven personalized learning platforms that could enrich students' understanding of historical events (Tamuno, 2025).

### **Limited Digital Literacy Among Teachers**

The successful deployment of AI in history education requires educators who possess adequate digital competencies. However, research by Adomi and Kpangban (2010) reveals that many teachers in Bayelsa State lack sufficient training in digital technologies. History teachers, often trained in traditional pedagogical methods, find themselves inadequately prepared to integrate AI tools into their instructional practices. This skills gap is compounded by insufficient professional development opportunities focused on educational technology. Without proper training, teachers cannot effectively utilize AI applications for analyzing historical documents, creating interactive timelines, or facilitating AI-powered discussions that encourage critical thinking about historical narratives (Owan et al., 2023; Gbene, 2025).

### **Cultural and Contextual Misalignment**

AI systems developed primarily in Western contexts often fail to reflect the cultural, historical, and linguistic nuances of Bayelsa State and Nigeria at large. Most AI-powered history applications feature Eurocentric content that marginalizes African historical perspectives and local Bayelsa narratives (Ngige, 2020). This cultural disconnect creates pedagogical challenges when attempting to teach local history, as AI databases may lack adequate information about Ijaw heritage, the Niger Delta's colonial history, or Bayelsa's formation as a state. Furthermore, language barriers exist since many AI tools operate predominantly in English, potentially disadvantaging students more comfortable with indigenous languages like Ijaw, thereby limiting the technology's accessibility and effectiveness (Akpan, 2021).

### **Financial Constraints and Sustainability Issues**

The economic realities of educational funding in Bayelsa State present substantial barriers to AI adoption. Implementing AI infrastructure requires significant capital investment for hardware, software licenses, maintenance, and continuous upgrades (Onyeneke, 2019). Many schools operate on limited budgets that struggle to cover basic operational costs, leaving little room for technology investments. Even when initial funding is secured through government initiatives or donor support, sustaining these technologies proves challenging due to ongoing costs for internet subscriptions, technical support, and system updates. This financial burden often results in abandoned technology projects, creating "white elephant" installations that fail to deliver long-term educational benefits (Gbene, 2025).

## Resistance to Change and Pedagogical Concerns

Traditional teaching methods remain deeply entrenched in Bayelsa's educational system, creating institutional resistance to AI integration. Some history teachers view AI as a threat to their professional relevance rather than a complementary tool (Ukpong & George, 2013). Additionally, legitimate pedagogical concerns exist about AI's limitations in teaching history—a discipline requiring critical analysis, interpretation, and understanding of human experiences that algorithms may inadequately address. There are fears that over-reliance on AI might diminish students' critical thinking abilities and reduce history to mere data consumption rather than interpretive engagement with the past.

## Recommendations

- i. Institutional Capacity Building and Teacher Training:** Government and educational stakeholders in Bayelsa State should prioritize structured capacity-building programmes for history teachers on the pedagogical integration of Artificial Intelligence. Regular workshops, digital literacy certification courses, and partnerships with universities should be institutionalized to bridge technical skill gaps. Training should emphasize ethical AI usage, critical source evaluation, and curriculum alignment to prevent overreliance on automated content. By strengthening teachers' technological competence, AI can serve as a supportive instructional tool rather than a substitute for professional historical interpretation and contextual analysis.
- ii. Improvement of Digital Infrastructure in Schools:** Addressing infrastructural deficits is essential for effective AI deployment in history classrooms across Bayelsa State. Many public schools face unreliable electricity, limited internet bandwidth, and inadequate computer facilities. The state government should invest in stable power supply solutions, subsidized broadband access, and functional ICT laboratories. Public-private partnerships with technology firms can enhance sustainability. Without foundational infrastructure, AI integration risks widening educational inequality between urban and rural schools, thereby undermining equitable access to innovative learning tools.
- iii. Development of Localized and Context-Sensitive AI Content:** AI tools used in history teaching should be contextualized to reflect local historiography, particularly the socio-political evolution of Bayelsa and the Niger Delta region. Curriculum developers should collaborate with historians and AI developers to embed indigenous knowledge systems, oral traditions, and region-specific case studies into digital platforms. This will reduce epistemic bias embedded in foreign datasets and prevent historical distortion. Context-sensitive AI content ensures that learners engage critically with their immediate environment rather than relying solely on generalized global narratives.
- iv. Establishment of Regulatory and Ethical Frameworks:** Educational authorities should formulate clear regulatory guidelines governing AI usage in secondary schools. Policies must address data privacy, academic integrity, intellectual property, and algorithmic bias. Oversight committees within the state Ministry of Education can monitor compliance and evaluate pedagogical outcomes. Ethical frameworks should also guide student use to prevent plagiarism and passive learning. A structured governance approach will ensure that AI integration enhances historical inquiry, analytical reasoning, and research competence rather than compromising academic standards.

## Conclusion

In sum, the deployment of Artificial Intelligence in history teaching in Bayelsa State presents significant structural, pedagogical, and ethical challenges that constrain its optimal utilization. These challenges include inadequate digital infrastructure, unstable electricity supply, limited access to internet connectivity, insufficient funding for technological integration, and a deficit in teachers'

digital competencies and AI literacy. Additionally, concerns relating to data privacy, academic integrity, overreliance on automated content generation, and the contextual irrelevance of AI-generated historical narratives to local historiography further complicate its effective adoption. In a state where educational institutions still grapple with fundamental resource limitations, the introduction of AI without a corresponding investment in capacity building, curriculum adaptation, and regulatory frameworks risks deepening educational inequality rather than enhancing instructional delivery. Therefore, while AI holds transformative potential for enriching historical inquiry and interactive learning, its successful integration in Bayelsa State requires deliberate policy planning, infrastructural development, teacher training, and a context-sensitive pedagogical approach that safeguards historical accuracy and indigenous perspectives.

**A. Primary Source (Oral Interviews)**

S/N	NAME	AGE	SEX	OCCUPATION	PLACE OF INTERVIEW	DATE OF INTERVIEW
1	Timiye, Taremi	50	M	Teacher	Yenagoa	11/10/2025
2	Gbene, Furo	NIL	M	Teacher	Virtual Interview	24/11/2025
3	Koko, Gospel	44	M	Teacher	Virtual Interview	30/10/2025
4	Tamuno, Diri	56	M	Teacher	Virtual Interview	08/12/2025
5	Keme, Jackson	50	M	Teacher	Virtual Interview	15/09/2025

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