TEACHER'S PERCEPTION OF THE CHALLENGES OF USING ARTIFICIAL INTELLIGENCE (AI) IN PROMOTING SCHOOL HEALTH EDUCATION IN OKIGWE SENATORIAL DISTRICT, IMO STATE

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Abstract
Climate change pose increasing risk to maternal health, particularly in low resource settings where environmental hazards intersect with socioeconomic vulnerabilities. The study examined Teachers' perceptions of the challenges of using Artificial Intelligence (AI) in promoting schools health education in Okigwe district of Imo State. Four research questions based on the following variables: usefulness of AI, technological challenges, infrastructural challenges and attitudinal factors were raised for the study. A descriptive survey research design was employed. The target population comprised all secondary school teachers involved in teaching health-related subjects in both public and private secondary schools in Okigwe senatorial district. Stratified random sampling technique was used to select a sample of 120 teachers, which consisted of 60 public schools and 60 private schools in Okigwe district. A self-structured and validated questionnaire was the main instrument for data collection. The internal consistency of the instrument was determined using the Cronbach's Alpha reliability coefficient, which yield a coefficient of 0.86. The researchers and trained research assistants administered the questionnaire directly to respondents and were collected immediately after completion. Data collected were coded and analysed using descriptive statistics of mean, standard deviation, and percentages. It was concluded that teachers in the senatorial district recognized the usefulness of artificial intelligence in promoting school health education. Results showed that teachers perceived AI as a useful for promoting school health education in Okigwe district (grand mean = 3.62), several technological challenges (grand mean =3.65), infrastructural deficiencies (grand mean =3.73) and the also teachers' attitudinal factors toward AI (grand mean = 3.36). It was concluded that teachers in Okigwe senatorial district recognized the usefulness of artificial intelligence (AI) in promoting school health education but face problems of technological, infrastructural and attitudinal challenges. It was recommended that government, educational policymakers, and stakeholders invest in digital infrastructure, teacher training, and attitudinal change programmes to facilitate effective AI integration in Imo State schools.

Keywords: Perceptions, Challenges, AI, Promoting, Health education, Okigwe senatorial district

Introduction

Artificial Intelligence (AI) has become an increasingly transformative force in the global education sector, offering vast opportunities for innovation, personalization, and efficiency in teaching and learning (United Nations Educational, Scientific and Cultural Organization (UNESCO, 2023). AI has really emerged as one of the most revolutionary force shaping modern pedagogy, administration, and learning outcomes. Artificial Intelligence (AI) refers to the ability of machines or computer systems to perform cognitive tasks that typically require human intelligence, such as learning, reasoning, perception, and problem-solving (Russell & Norvig, 2021). In the field of health education, AI technologies such as intelligent tutoring system, predictive analytics, adaptive learning platforms, and virtual stimulations have the potential to revolutionize instructional delivery, promote evidence-based learning and enhance health literacy among students (Alam, 2022, Nwosu & Okeke, 2021). The use of AI in school health education is relevant in contemporary Nigeria, where educators and policy makers are striving to improve the quality of health institution in primary and secondary schools to promote public health awareness and lifelong healthy behaviours.

Artificial intelligence (AI) applications is a critical component of school curricula aimed at fostering physical, mental, and social well-being among students. Health education seeks to equip learners with the knowledge, attitudes, and skills necessary to make informed decisions about their personal and community health (World Health Organization (WHO), 2023). The integration of AI in school health education presents opportunities for interactive, student-centered learning though tools such as intelligent tutoring systems, virtual health stimulations, data-driven health analytics, and chatbots for personalized health counseling (Alam, 2022). According to Nwosu and Okeke (2021), these AI driven innovations can transform traditional classroom teaching by enabling teachers to provide individualized health instruction, assess learning progress more effectively, and encourage behaviour change through immersive learning environment.

However, despite the promising potential of AI integration in education, the pace of adoption in Imo State, including Okigwe senatorial district, has been remarkably slow. This slow pace uptake can be attributed to a variety of technological, infrastructural, pedagogical, and institutional challenges (Eze, 2023). Uche and Chika (2022) collaborated that many schools in Nigeria still struggle to integrate basic digital technologies, let alone advanced AI applications. Their study noted limited access to electricity, poor internet community, inadequate ICT infrastructure, and insufficient teacher training have created deeper seated barriers to AI utilization in the education sector.

Okigwe senatorial district is one of three senatorial districts in Imo State, consisting of six local government areas namely Okigwe, Onuimo, Isiala-Mbano, Ehime-Mbano, Ihitte-Uboma, and Obowo LGAs; and a major educational industry in Imo State, Nigeria. Education has been described in the state as the largest industry. There is hardly any community in the state that is not served by at least one primary and post primary school (Ogueri, 2023). Okoro and Ezeanya (2021) affirmed that challenges of the adoption of AI in promoting school health education in Imo state, particularly Okigwe senatorial district where most of the institutions operate with no technological resources. In private

institution, where ICT laboratories exist, are often poorly equipped or under-utilized. Electricity supply is erratic, if it exist, internet access is unreliable, and education budgets rarely include allocations for educational technology procurement. While global education systems are adopting AI to revolutionize institution and improve learning outcomes, schools in Okigwe senatorial district continue to rely heavily on traditional teaching methods that limit innovation and interactivity.

Teachers perceptions of challenges such as data privacy, cost of technology, lack of training, and institutional unpreparedness are thus central to understanding the feasibility of AI adoption. According to Onuoha (2024), Imo State educational institutions lack clear policy frameworks for AI integration, leaving teachers to navigate these challenges individually, without institutional guidance or support, and teachers' willingness to adopt AI tools in promoting health education is likely to remain low.

Teachers play a central role in determining whether technological innovations such as AI succeed or fail in educational environment. Their perception, attitude and readiness significantly influence the adoption and sustainability of emerging technologies (Venkatesh & Bala, 2008). Davis (2018) emphasizes that teachers' perceptions of usefulness and ease of use largely determine their willingness to adopt new technologies. If teachers perceive AI as complex, resource intensive, or irrelevant to their instructional goals, they are less to integrate it into classroom practice. Conversely, positive perceptions supported by institutional encouragement and adequate training can promote adoption and foster innovation.

Adebayo and Ibrahim (2022) found that while most health education teachers expressed awareness of AI's potential benefits, only a small fraction had received training or practical exposure to AI-based instructional tools. Similarly, Opara (2022) reported that health education teachers in Southeastern Nigeria recognized the importance of digital pedagogy but were constrained by limited technological competence and poor institutional support. These findings indicate that teachers' perceptions are shaped not only by their personal attitudes but also by contextual factors such as availability of resource, infrastructural readiness, and administrative support.

Studies have affirmed that teachers perceived AI as a threat to their professional autonomy, fear that automation might virtually replace human educators (Haenlein & Kaplan, 2021). Others view AI as too complex or foreign to the Nigeria educational context, believing it requires advanced technical skills and resources unavailable to their schools (Onuoha, 2024). Such perceptions whether grounded in reality or misconceptions, can affect teachers' willingness to experiment with AI tools, thereby limiting innovation in the classroom. Similarly, Mhlongo and Luthull (2022) revealed that teachers' uncertainty and AI's role in education coupled with limited training opportunities led to resistance and underutilization of available AI tools.

Against this backdrop, this study examined teachers' perceptions of the challenges of using AI in promoting school health education in Okigwe senatorial district of Imo State. It seeks to explore how teachers perceive the usefulness, accessibility, and practicality of AI tools in enhancing health education; the infrastructural and institutional

barriers they face; and the extent to which their perceptions shape their willingness to adopt AI in classroom instruction.

Methodology

Descriptive survey research design was employed for the study. Creswell and Creswell (2023) opined this design facilitates the description of situation in its present state and solicit information directly from the respondents. The study was conducted in Okigwe senatorial district, one of the three senatorial district that make up Imo State, Nigeria. Okigwe senatorial district is an educational area that host numerous public and private secondary schools. The target population comprised all secondary schools teachers involved in teaching health-related subjects such as health education, physical and health education and paper in both public and private secondary schools in Okigwe senatorial district. According to the Imo State Ministry of Education (2025), there are 163 secondary schools in Okigwe senatorial district, with an estimated 320 health-related subject teachers. A total sample of 120 teachers was drawn from the target population using a stratified random sampling technique. The schools were stratified into public (26 schools) and private (26 schools) categories to ensure equitable representation. The instrument used for data collection was a structured questionnaire developed after reviewing related literature and similar instruments used in prior studies. It was structured in line with the variables of the study. The instrument was subjected to face and content validity by three lecturers in Public Health and Health Education. Their observation, corrections and recommendations were incorporated into the final version of the questionnaire. The reliability of the instrument was also established using 20 health education teachers selected from secondary schools not part of the target population. The internal consistency of the instrument was determined using the Cronbach's Alpha reliability coefficient, which yielded a coefficient of 0.86. Data collection was carried out through direct administration of questionnaire by the researchers and trained research assistants. Completed copies were retrieved immediately after completion. Data collected were coded and analyzed using descriptive statistics (Mean, Standard deviation, and percentage) to answer the research questions.

Results

Research Question One:

What is the perception of teachers towards usefulness of Artificial intelligence in promoting school health education in Okigwe senatorial district?

Table 1: Mean ratings of teachers' perception of Artificial Intelligence in promoting School Health Education in Okigwe Senatorial District.

S/N	Items	X	SD	Decision
1.	AI can help improve students' understanding of health concepts through interactive learning tools.	3.74	0.42	Agree
2.	AI can assist teachers in providing personalized health education for students.	3.61	0.51	Agree
3.	AI applications can enhance students' engagement in school health activities.	3.58	0.49	Agree
4.	AI can make the assessment of student' health knowledge more efficient.	3.53	0.54	Agree
	Grand Mean	**3.62**	**0.49**	**Agree**

Results in table 1 show that teachers generally agreed that AI is useful for promoting school health education in Okigwe senatorial district (grand mean = 3.62). The teachers perceived AI as capable of enhancing interactivity, personalizing health learning, improving engagement, and making assessment more efficient. This indicates a generally positive perception of the usefulness of AI in health education.

Research Question Two:

What technological challenges do teachers perceive as barriers to the use of Artificial Intelligence in promoting school health education in Okigwe senatorial district?

Table 2: Mean ratings of technological challenges to AI use in school health education in Okigwe senatorial district.

S/N	Items	X	SD	Decision
5.	Lack of access to AI-compatible devices.	3.68	0.56	Agree
6.	High cost of AI tools and digital platforms.	3.77	0.45	Agree
7.	Limited technical knowledge of teachers on AI use.	3.59	0.53	Agree
8.	Poor maintenance culture for ICT facilities in schools	3.70	0.50	Agree
	Grand Mean	**3.65**	**0.53**	**Agree**

The data in table 2 reveal that teachers perceived several technological challenges affecting the use of AI in health education. These include lack of AI devices, high cost of tools, limited technical competence and poor maintenance culture. The grand mean of 3.65 indicates that technological constraints are a major barrier to AI adoption in Okigwe schools.

Research Question Three:
What infrastructural challenges do teachers perceive as affecting the integration of Artificial Intelligence into school health education in Okigwe senatorial district?

Table 3: Mean ratings of infrastructural challenges in Okigwe senatorial district.

S/N	Items	X	SD	Decision
9.	Unstable electricity supply in schools.	3.83	0.38	Agree
10.	Poor internet connectivity limits AI tool usage.	3.74	0.42	Agree
11.	Inadequate computer laboratories and digital classrooms.	3.70	0.49	Agree
12.	Insufficient ICT infrastructure for AI-supported learning.	3.64	0.55	Agree
	Grand Mean	**3.73**	**0.46**	**Agree**

Findings in table 3 show that infrastructural deficiencies are among the most critical barriers to AI use in school health education. Teachers strongly agreed that unstable electricity and poor internet connectivity are the most pressing issues. The overall grand mean of 3.73 suggests a very high level of infrastructural challenge affecting AI integration in Okigwe senatorial district.

Research Question Four:
What attitudinal factors influence teachers' perceptions of the challenges of using Artificial Intelligence in promoting school health education in Okigwe senatorial district?

Table 4: Mean ratings of attitudinal factors in Okigwe senatorial district.

S/N	Items	X	SD	Decision
13.	I am interested in learning how to use AI in teaching health education.	3.42	0.60	Agree
14.	I am afraid that AI might replace teachers in the future.	3.21	0.71	Agree
15.	I find AI technologies complex and difficult to use.	3.34	0.68	Agree
16.	I am motivated to adopt AI if given training and support.	3.65	0.52	Agree
	Grand Mean	**3.36**	**0.65**	**Agree**

As shown in table 4 teachers' perception are influenced by positive curiosity toward AI. While most teachers expressed motivation to learn and adopt AI, they also indicated fears of job replacement and technological complexity. The grand mean of 3.36 shows a generally positive attitude, suggesting that teachers are open to AI integration if adequate orientation and institutional reassurance are provided.

Discussion of Findings
Each research question is discussed separately to provide clarity and analytical depth. The finding on research question one revealed that teachers generally perceived Artificial

Intelligence (AI) as highly useful in promoting school health education in Okigwe senatorial district. The mean score (m = 3.62) showed that teachers agreed AI can enhance students' understanding of health concepts, improve engagement, and support individualized instruction. This indicates that teachers are aware of the educational potential of AI and recognize its relevance in facilitating effective learning experiences. Thisfindings collaborates with UNESCO (2023) that asserted that AI has transformative potential in improving learning outcomes. Similarly, Alam (2022) emphasized that AI technologies such as virtual health simulations and data-driven analytics can personalize learning and strengthen students' comprehension of complex health topics.

The findings from the research question two revealed that teachers face considerable technological challenges in interpreting AI into health education in Okigwe senatorial district. The table showed major constraints such as high cost of AI tools, lack of access to AI-compatible devices, limited technical knowledge, and poor maintenance culture. The cluster mean (m = 3.65) suggests that these barriers are widespread and substantial among schools in Okigwe senatorial district. These findings align with Eze (2023), who found that technological inadequacy, for example lack of AI equipment and technical know-how remains one of largest obstacles to educational technological adoption in Imo State. Likewise, Adebayo and Ibrahim (2022) reported that while teachers expressed interested in digital innovation, lack access to basic ICT and AI infrastructure necessary for effective implementation.

The results in research question three showed that infrastructural challenges such as unstable electricity supply, poor internet connectivity, inadequate ICT facilities, and poor maintenance culture were major obstacles to AI integration (cluster mean = 3.75). Teachers agreed that infrastructural deficiencies severely limit the ability to schools to sustain AI assisted instructions. This finding is in line with Uche and Chika (2022), who reported that unreliable power supply and limited infrastructure were the most pressing constraints in deploying ICT in Imo State schools. Similarly, World Bank (2023) identified infrastructure deficits including limited digital equipment and network access as key obstacles in achieving educational digitalization across sub-sahara Africa.

The results from table four indicated that teachers' attitudes toward AI were positive. Most teachers expressed strong interest and motivation to learn about AI. They also reported fears of job loss and concerns about complexity (Cluster mean = 3.36). This finding is consistent with Haenlein and Kaplan (2021), who noted that teachers often experience both excitement and apprehension when confronted with new technologies that could alter traditional teaching roles. Similarly, Opara (2022) reported that teachers are open to using digital tools, but negative emotions such as fears, stress, and skepticism hinder consistent adoption.

Conclusion

Based on the findings and discussion of this study, it was concluded that teachers in Okigwe Senatorial district recognize the usefulness of Artificial intelligence (AI) in promoting school health education but face significant technological, infrastructural and attitudinal challenges.Based on the findings, the following recommendations were made:

i. There is an urgent need to strengthen ICT and AI infrastructure in schools, particularly Okigwe senatorial district of Imo State. The Imo State Government in collaboration with the Federal Ministry of Education should interest substantially in technological infrastructure development across all secondary schools in Imo State.
ii. There is a need for continuous professional development programmes focused on AI literacy, digital padagogy, and practical applications in health education.
iii. Workshops and seminars should be conducted regularly to train teachers on how to integrate AI tools such as intelligent tutoring system, virtual simulations and health education apps into classroom practice.
iv. There is a need to establish school-based AI and ICT support units responsible for the technical maintenance of digital systems, teacher support, and resource management.
v. Reliable power supply should be through the provision of solar-powered systems and backup generators to sustain AI driven teaching tools.
vi. There is an urgent need to conduct sensitization and awareness campaigns to reassure teachers that AI is a supportive tool rather than a substitute for teachers.
vii. There is a need to incorporate AI into teacher education curriculum in universities and colleges of education.

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