

Evaluating the Extent of Artificial Intelligence Awareness Among Senior Secondary School Students in Delta State

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Abstract: This study examined how much senior secondary school students in Delta State, Nigeria, know about intelligence. The study also looked at what these students think about intelligence and the problems and good things about teaching artificial intelligence in secondary school. The study used a survey to ask questions to 268 students from nine schools in Asaba. The students answered a questionnaire called the Senior Secondary School Artificial Intelligence Awareness Questionnaire. The answers were looked at to see what the students said. The study found that the students know a lot about intelligence. They also like the idea of intelligence and think it should be taught in school. The students said that the schools do not have enough computers and other technology, and that the teachers need more training to teach artificial intelligence. With these problems, the students think artificial intelligence can help them learn digital skills and get ready for a career. The study says that senior secondary school students in Delta State like the idea of intelligence and think it is valuable for education. The study says that the government and schools should make sure there are computers and other technology, and that teachers get the training they need to teach artificial intelligence.

Keywords: *Artificial Intelligence, Artificial Intelligence Awareness, Secondary School Students, Attitudes Towards Artificial Intelligence, Curriculum Integration, Delta State.*

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I. INTRODUCTION

Artificial Intelligence (AI) plays an important role in education, influencing teaching methods and learning outcomes. As AI technology evolves rapidly, integrating it into various subjects beyond just computer science has become more essential. AI tools can, for instance, analyze literature in language arts, predict historical trends in social studies, and model ecosystems in biology classes. Over the past few decades, AI technologies have opened new doors for educational opportunities, allowing for more personalized and efficient learning experiences (Okeke, 2019).

This wide-ranging applicability underscores the importance of thorough education on AI across all subjects rather than restricting it to computer science classes. UNESCO pointed out that the relationship between AI and education includes three aspects: learning with AI (for instance, using AI tools in classrooms), learning about AI (its technology and techniques), and preparing for AI (helping everyone understand AI's potential effects on lives).

The Beijing Consensus on Artificial Intelligence, created by UNESCO, promotes using AI to empower both educators and students, equipping them with both technical and soft skills for their lives and careers. In Delta State, Nigeria, understanding AI's role in secondary education is especially important given the current challenges within the educational system. Research indicates that government efforts have struggled to address issues such as stagnant academic performance, evident in the declining results in the West African Senior School Certificate Examination (WASSCE). Factors contributing to these problems include natural disasters, the effects of the COVID-19 pandemic, and student absenteeism due to cult activities. This research highlights the need for better infrastructure and funding strategies to enhance the quality and accessibility of education.

As AI technology keeps advancing, both teachers and students need to understand its fundamental principles, including AI's abilities and limitations. AI is a modern technical framework aimed at developing computer systems

that can perform tasks typically requiring human intelligence (Aina, 2023).

This knowledge is vital for establishing an effective learning environment where aspiring teachers can leverage AI tools to improve their teaching methods, boosting student interest and academic achievement. The collective effort to integrate AI literacy into education focuses on preparing students to thrive in a technology-driven world. This initiative emphasizes the need for reconsidering educational priorities and investing in teacher training and infrastructure.

ChatGPT can also assist teachers by reducing their workload, allowing for more individualized interactions and instruction (Chang & Kuo, 2020).

Integrating AI can produce innovative solutions to different challenges. AI-driven adaptive learning systems can address each student's unique learning needs and preferences, offering tailored educational experiences suited to their strengths and learning styles. Additionally, AI can help close the gap in access to quality education, especially in remote or disadvantaged areas, by providing virtual tutoring, online courses, and educational materials that overcome geographical barriers. AI's contributions can significantly improve senior secondary education in Delta State.

Artificial Intelligence (AI) is now a key part of modern life, influencing various fields such as education, healthcare, and the economy. As AI evolves, it's essential to assess how aware senior secondary school students are about it since they represent the next generation of leaders and citizens. Understanding their awareness of AI is crucial for helping students recognize its benefits, challenges, and social implications. However, there is limited research on AI awareness among senior secondary school students in Delta State, Nigeria. This study aims to fill this knowledge gap by investigating the awareness of AI among these students.

➤ *Statement of the Problem*

Recently, artificial intelligence (AI) has become a transformative technology in various fields, including education, healthcare, finance, and security. Despite this, many developing countries, like Nigeria, have not integrated AI into educational programs, especially at the secondary school level, making it a concern for students' readiness to engage in a future shaped by AI.

Delta State, like several other regions in Nigeria, is slowly advancing in technology. However, there is a lack of solid information on AI awareness among senior secondary school students and how it relates to their academic and professional futures. Without a clear understanding of their knowledge levels, it becomes tough for educational authorities, teachers, and curriculum designers to make informed choices about integrating AI education into schools.

Thus, this study aims to assess the level of AI awareness among senior secondary school students in Delta

State, identify knowledge gaps, and suggest ways to better prepare them for future careers and innovation.

➤ *Objectives of the Study*

The objectives of this research are to measure the level of AI awareness among senior secondary school students in Delta State, and include the following:

- To explore the students' understanding and perceptions of AI.
- To identify the factors affecting AI awareness among senior secondary school students.
- To provide suggestions for improving AI awareness and education among these students.

➤ *Research Questions*

- What is the current level of knowledge and understanding of AI among students and teachers?
- What are the opinions and feelings about AI held by students and teachers in these schools?
- What specific challenges and opportunities arise from including AI in the senior secondary school curriculum in Delta State?

➤ *Justification of the Study*

- **Educational Importance:** With the global economy increasingly depending on digital technologies and smart systems, students need to acquire fundamental knowledge about AI. Knowing current awareness levels can assist in shaping future curriculum development.
- **Educational Policy and Curriculum Design:** The findings of this study can serve as a valuable resource for educational policymakers to help them formulate strategies for integrating AI education within Nigerian secondary schools.
- **Empowering Youth:** By assessing how exposed students are to AI concepts, this research can help launch initiatives that spark interest and develop skills in digital technologies among Delta State youth.
- **Bridging the Digital Divide:** This study can highlight differences in AI awareness between urban and rural schools and between public and private institutions, guiding efforts to achieve equitable digital education.
- **Preparing for Future Careers:** Introducing AI concepts early could improve students' chances of entering tech-related careers, supporting national goals of building a digitally skilled and innovative workforce.

II. LITERATURE REVIEW

AI is a fast-evolving technology intended to mimic human thinking, enabling it to tackle complex and vague issues in an intelligent and adaptable way (P. Cheeseman and W.B. Gevarter, 2021). AI aims to develop computational methods for intelligent behavior, covering various aspects of human cognitive function (Jean-Claude, K.K., 2022). It represents a type of intelligence in machines, allowing them to replicate human abilities, such as decision-making, problem-solving, and language processing. AI collects, processes, and learns from data to perform automated tasks and enhance decision-making (Kennedy, H. and Wintes, L.,

2022). Recently, AI has significantly affected many fields, enhancing human life and improving performance in manufacturing, service, and expert systems (Vignesh, M., and Thanesh, K., 2020). AI is everywhere, with applications in health, security, education, music, art, and business (Ajankar, S.S., and Nimodiya, A.R., 2022).

In education, AI has the potential to transform teaching and learning by providing diverse tasks, from personalized instruction to assessment, enhancing both teaching and learning (Harry, A., 2023). Teachers and AI can work together to improve education. AI can help teachers design innovative instructional methods, use immersive technology, and customize learning experiences for each student, resulting in a more meaningful educational journey (Mujiono, M., 2023). AI technologies can save teachers time by streamlining educational processes and tasks. This allows educators to focus on curriculum development and instruction. Slimi, Z. (2023)

III. METHODOLOGY

This study adopted a descriptive survey research design. The design was considered appropriate because it enabled the researchers to collect data from respondents regarding their extent of awareness of Artificial Intelligence. The descriptive survey design also allowed the findings obtained from the respondents to be generalized to the study population. The study was conducted in Asaba, Delta State, Nigeria, with a specific focus on nine (9) secondary schools in oshimili-south local government area. The selected schools are; Zappa mixed secondary school, Zappa Basic secondary school, Niger Mixed secondary school, Osadenis mixed secondary school, Isioma Onyeobi college, Asagba mixed secondary school, Government model secondary school, Unity secondary school, and West end mixed secondary school.

➤ Population of the Study

The population of the study consisted of 268 senior secondary school students randomly selected from nine secondary schools in oshimili-south local government area. The distribution of respondents is summarized in the table below:

Table 1 Distribution of Respondents is Summarized

SN	School	No of Respondents
1	Zappa mixed secondary school	29
2	Zappa Basic secondary school	30
3	Niger Mixed secondary school	29
4	Osadenis mixed secondary school	29
5	Isioma Onyeobi college	30
6	Asagba mixed secondary school	31
7	Government model secondary school	30
8	Unity secondary school	30
9	West end mixed secondary school	30
	Total	268

➤ Instrument for Data Collection

The instrument used for data collection was a structured questionnaire titled *Senior Secondary School Artificial Intelligence Awareness Questionnaire (SSAIAQ)*. The questionnaire was divided into three sections. Section A collected demographic information from respondents, Section B contained items related to Awareness and understanding of Artificial Intelligence, while Section C contains items related to Attitudes Towards Artificial Intelligence.

The questionnaire items were structured using a four-point Likert scale of:

- Strongly Agree (SA) = 4
- Agree (A) = 3
- Disagree (D) = 2
- Strongly Disagree (SD) = 1

➤ Validation of the Instrument

To ensure the validity of the instrument, the questionnaire was subjected to face and content validation by three experts: two specialists in Educational Technology and one expert in Measurement and Evaluation. The experts carefully reviewed the questionnaire items to determine their clarity, relevance, appropriateness, and alignment with the research objectives and research questions. Their observations, corrections, and recommendations were incorporated into the final version of the instrument before administration.

➤ Method of Data Collection

The researchers personally administered the questionnaire to the respondents. Before administering the instrument, permission was obtained from the principals of the selected schools. Respondents were informed about the purpose of the study and were encouraged to provide honest responses.

➤ Ethical Considerations

Ethical considerations were strictly observed throughout the study. Participation in the study was voluntary, and informed consent was obtained from all respondents before data collection. Respondents were assured of anonymity and confidentiality, and they were informed that the information provided would be used strictly for academic purposes only.

IV. METHOD OF DATA ANALYSIS

Data collected for the study were analyzed using descriptive statistics, specifically frequencies and mean scores, to answer the research questions. The criterion mean of 2.50 was used for decision-making. Any item with a mean score of 2.50 or above was regarded as "Agreed," while any item with a mean score below 2.50 was regarded as "Disagreed."

V. DATA ANALYSIS AND RESULTS

Data collected for the study were analysed using descriptive statistics, specifically frequencies and mean scores, to answer the research questions. The decision rule

was based on the criterion mean of 2.50, which was derived from the four-point Likert scale as follows:

$$\frac{4 + 3 + 2 + 1}{4} = 2.50$$

Therefore, any item with a mean score of 2.50 or above was regarded as “Agreed,” while any item with a mean score below 2.50 was regarded as “Disagreed.” The use of mean

scores and frequencies enabled a clear interpretation of the responses from the respondents

Table 1: Research Question One: What is the current degree of knowledge and comprehension of artificial intelligence (AI) among senior secondary school students in Delta State?

Table 1: Revealed the Mean and Standard Deviation of the Degree of Knowledge and Comprehension of Artificial Intelligence (AI) among Senior Secondary School Students in Delta State

S/N	Statement	SA	A	D	SD	x	S.D	Remark
1	I have heard of Artificial Intelligence (AI).	140	120	5	3	3.48	0.65	Agree
2	I understand the meaning of Artificial Intelligence (AI).	135	125	6	2	3.49	0.63	Agree
3	I can identify common AI applications such as ChatGPT, Siri and Google Assistant.	138	122	7	1	3.50	0.62	Agree
4	I know that AI can be applied in teaching and learning.	142	118	4	4	3.48	0.66	Agree
5	I have used AI-powered tools for learning or personal activities.	130	130	7	1	3.47	0.64	Agree
	Cluster Mean					3.48	0.64	Agree

Table 1 shows that the mean scores for all five items ranged from 3.47 to 3.50, which are above the criterion mean of 2.50. Students agreed that they have heard of AI (Mean=3.48, SD=0.65), understand its meaning (Mean=3.49, SD=0.63), can identify common AI applications (Mean=3.50, SD=0.62), know AI can be applied in teaching and learning (Mean=3.48, SD=0.66), and have used AI-powered tools (Mean=3.47, SD=0.64). The low standard deviations indicate consistent responses. The findings reveal that students possess a high level of AI awareness and understanding. Most are familiar with AI concepts, recognize common AI tools, understand their educational relevance, and have practical experience using AI-powered applications.

Table 2: Research Question Two: What are the views and feelings regarding artificial intelligence (AI) held by senior secondary school students in Delta State?

Table 2: Shows the Mean and Standard Deviation of Students' Attitudes Towards Artificial Intelligence (AI)

S/N	Statement	SA	A	D	SD	X	S.D	Remark
1	Artificial Intelligence is useful in everyday life.	128	132	6	2	3.46	0.63	Agree
2	Artificial Intelligence can improve teaching and learning.	134	124	9	1	3.47	0.65	Agree
3	I am interested in learning more about Artificial Intelligence.	136	126	3	3	3.49	0.64	Agree
4	Artificial Intelligence should be introduced into the senior secondary school curriculum.	132	128	5	3	3.48	0.64	Agree
5	Knowledge of Artificial Intelligence will be beneficial to my future career.	139	120	8	1	3.49	0.62	Agree
	Cluster mean					3.48	0.64	Agree

Table 2 indicates that all mean scores ranged from 3.46 to 3.49, exceeding the criterion mean. Students agreed that AI is useful in everyday life (Mean=3.46, SD=0.63); it improves teaching and learning (Mean=3.47, SD=0.65); they are interested in learning more about AI (Mean=3.49, SD=0.64); AI should be introduced into the curriculum (Mean=3.48, SD=0.64), and AI knowledge will benefit future careers (Mean=3.49, SD=0.62). Responses were highly consistent. Findings revealed that Students have a positive attitude toward AI. They support its use in education, are eager to learn more about it, and believe AI knowledge is valuable for their future careers.

Table 3: Research Question Three: What difficulties and prospects arise from incorporating artificial intelligence (AI) into the senior secondary school curriculum in Delta State?

Table 3: Revealed the Mean and Standard Deviation of the Challenges and Prospects of Incorporating Artificial Intelligence (AI) into the Senior Secondary School Curriculum

S/N	Statement	SA	A	D	SD	X	S.D	Remark
1	Lack of computers and internet facilities affects students' awareness of AI.	141	119	5	3	3.49	0.63	Agree

2	Lack of trained teachers limits students' understanding of AI.	137	123	6	2	3.48	0.63	Agree
3	AI education will improve students' digital and problem-solving skills.	133	127	7	1	3.48	0.62	Agree
4	The government should provide AI learning resources in secondary schools.	129	131	5	3	3.47	0.64	Agree
5	Introducing AI into the school curriculum will better prepare students for future careers.	140	122	4	2	3.49	0.63	Agree
	Cluster mean score					3.48	0.63	Agree

Table 3 shows mean scores between 3.47 and 3.49 for all items, indicating agreement. Students agreed that lack of computers and internet facilities (Mean=3.49, SD=0.63) and shortage of trained teachers (Mean=3.48, SD=0.63) limit AI awareness. They also agreed that AI education will improve digital and problem-solving skills (Mean=3.48, SD=0.62), the government should provide AI learning resources (Mean=3.47, SD=0.64), and AI integration will better prepare students for future careers (Mean=3.49, SD=0.63). Findings show that Students recognize both the opportunities and challenges of AI integration. They believe improved infrastructure, trained teachers, government support, and curriculum integration are essential for successful AI education.

VI. CONCLUSION

Studies show that AI could significantly help address unfinished learning among students, improve their engagement, and boost overall educational effectiveness. AI also has the potential to change teaching methods, making education more accessible and efficient. However, the gap in access to technology remains a major obstacle. Factors like natural disasters, socio-economic conditions, and the ongoing impacts of the pandemic create unequal educational opportunities. The research highlights the government's failure to address these challenges, which has worsened stagnation in academic achievement, especially evident in the West African Senior School Certificate Examination (WASSCE) results.

RECOMMENDATIONS

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

- Artificial Intelligence education should be integrated into the senior secondary school curriculum. This will enable students to acquire foundational knowledge and practical skills in AI, thereby preparing them for higher education and the evolving digital workforce.
- Government and educational stakeholders should provide adequate Information and Communication Technology (ICT) infrastructure in secondary schools. Schools should be equipped with functional computer laboratories, reliable internet connectivity, and AI-enabled learning resources to facilitate effective teaching and learning.
- Teachers should receive regular training and professional development on Artificial Intelligence and its educational applications. This will improve their

competence and confidence in integrating AI tools into classroom instruction and supporting students' learning experiences.

- Schools should encourage the responsible use of AI-powered educational tools such as ChatGPT, Microsoft Copilot, Google Gemini, and other AI learning platforms to enhance students' creativity, critical thinking, research skills, and problem-solving abilities while promoting ethical AI use.
- School administrators should organize seminars, workshops, and awareness programmes on Artificial Intelligence to increase students' understanding of AI technologies, their applications, opportunities, and associated ethical considerations.

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