



TEACHERS' DISPOSITIONS TOWARDS INTEGRATING ARTIFICIAL INTELLIGENCE IN SECONDARY SCHOOL CURRICULUM IN ADO-ODO OTA LOCAL GOVERNMENT AREA IN OGUN STATE, NIGERIA

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Abstract

Artificial Intelligence (AI) is the theory and development of computer systems capable of performing tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. This approach has been adopted by many organizations, including schools, to facilitate the teaching and learning process. This development has raised varying opinions on the future of employment within all sectors, including the educational sector. The purpose of this research was to examine teachers' dispositions towards integrating artificial intelligence in secondary school curriculum using selected schools in Ado-Odo Ota Local Government in Ogun State. A descriptive statistical method was used, and 120 teachers were purposively sampled from public secondary schools in Ado-Odo Ota Local Government in Ogun State. The data were collected using a questionnaire and analyzed using descriptive statistical methods. The findings of the study revealed that Teachers' disposition towards integrating AI in secondary school is positive and slightly above the 50% average point, Teachers perceive the influence of integrating AI on the academic performance of secondary school students is positive and very high and lack of understanding of AI concepts, lack of access to digital devices, lack of training skills, and high cost of data subscription affected the integration of AI in the school. It was recommended among others that teachers should be sensitized to the importance of Artificial Intelligence in teaching.

Keywords: Artificial Intelligence, Secondary School Curriculum, Teachers Dispositions and Computer System

Introduction

The need for computer technology and literacy in our educational system has become more relevant (Badmus, 2004). Artificial Intelligence (AI) is a broad field encompassing various technologies that have been developed over the past 50 years to enable machines to perform tasks traditionally requiring human intelligence, such as perceiving, reasoning, learning, and interacting (Ergen, 2020). The recent advancements in generative AI (GenAI), have brought unprecedented attention to AI's transformative



potential across the education system. According to Hong *et al.*, 2022 predictive (pre-generative) AI focuses on predictions and decision-making through a variety of machine learning and modeling techniques, generative AI specializes in creating new content, such as text, images, and code, by using deep learning models, which is essential to understanding the breadth of AI applications in education.

Artificial intelligence in education (AIED) is an evolving interdisciplinary arena incorporating AI technologies to renovate and enhance teaching and learning environments. Particularly, the application of AI in science teaching and learning is becoming more popular, even as interest in AI's effects on general education is growing (Chiu *et al.*, 2023). More specifically, machine learning, a specific artificial intelligence technology, has been applied to automatically evaluate scientific models used in the education sector.

As Gonzalez *et al.* (2023) found, rapid technological development has unlocked potential, challenges, and prospects in teaching and learning. Technological development has also widened the gap in understanding how these technologies are used, applied, and how they work, especially emerging technologies such as Artificial Intelligence (AI) and Machine Learning (ML).

Gonzalez added that AI algorithms and systems are increasingly becoming integrated with our society, automating tasks and assisting humans with decisions. As such, AI would undoubtedly cause the workforce to evolve, which suggests new responsibilities for all, especially developing approaches to build future knowledge workers and set the stage for their careers, which will require the ability to interact with AI and ML tools effectively. Realizing the need to prepare secondary school students for an AI and ML-permeated future, researchers, practitioners, and educational stakeholders have made concerted efforts to develop resources for teaching ML. According to Olaleye (2022), who discovered a guideline that was developed for teaching AI to secondary school students through the joint effort of the Association for the Advancement of Artificial Intelligence (AAAI) and the Computer Science Teachers Association (CSTA). Subsequently, resources and activities that promote understanding of AI and ML keep unfolding. Such resources and activities include the development, implementation, and evaluation of curriculum and tools.

Innovative approaches that use technology to enhance education have contributed immensely to the development of education in this part of the developing world (Badmus, 2020). Artificial intelligence (AI) is an innovative technical framework that encompasses creating computer systems with the ability to execute activities that usually need human intellect. These activities involve problem-solving, acquiring knowledge, comprehending language, and seeing visual information. AI has become increasingly prominent in recent years, bringing about a revolutionary transformation in the methods by which jobs are completed in numerous businesses. Within the realm of education, artificial intelligence (AI) offers a multitude of possibilities to augment the learning process. Intelligent systems provide the ability to adjust to the specific requirements of each learner, deliver tailored learning experiences, and provide immediate feedback. AI applications in education encompass adaptive learning platforms, intelligent tutoring systems, and virtual simulations. Through the use of artificial intelligence, educators can construct dynamic and interactive learning environments that accommodate the various learning styles and capabilities of students



(Badmus & Shittu, 2025). The convergence of AI and scientific education presents significant opportunities for tackling the obstacles encountered by the Nigerian educational system. The use of AI tools and technology in secondary school science classrooms has the potential to fundamentally transform the methods of teaching and learning, hence enhancing accessibility, engagement, and effectiveness of education.

The crucial role of teachers in the teaching and learning process cannot be over-emphasized. This becomes more evident when new ideas and topics are to be introduced to students. Artificial intelligence (AI) education, a relatively new concept for the secondary school educational level, has been considered an important subject to be incorporated from secondary school through to high institution (Sanusi, & Dixon, 2022). According to Olaleye (2022), the emergence of AI education as a subject places new demands on teachers, researchers, and policymakers to ensure its effective implementation in schools. While the adoption of new curricula material necessitates state policy analysis and future needs, the study also claimed that there are increasing initiatives by researchers to ensure the democratization of AI among students across grade levels. Such initiatives include the design of curricula, tools, resources, and approaches that support teaching and learning AI concepts. Sanusi, (2022) discovered that despite several researcher-designed curricula and resources to introduce the AI concept, still teachers possess limited knowledge to teach AI to their students. Lack of AI knowledge as a barrier to AI implementation, has begun to explore the preparation of teachers to teach AI through professional development (PD) programs (Lee & Perret, 2022) and co-design of learning resources. Sanusi, (2022) posited that PD is important in exploring teachers' intention and readiness to teach AI in classrooms is imperative since teachers' acceptance and disposition could be a pointer to their interest in teaching technology and impact their teaching practices.

Olasedidun, Ganiyu and Badmus (2021) agreed that gathering teachers' attitude and readiness to teach with digital technology or online facilitation would contribute to understanding the factors that support the successful implementation of AI in schools. The study also claimed that there is a lack of research in the emerging field that specifically considers teachers, no study has investigated teachers' intention and readiness to teach AI in schools which necessitates the need to consider filling the gap. Kamrani, (2021) has identified students' intention to learn AI; teacher's perspective should not be secondary since teachers are expected to promote AI-related concepts in class. It is then necessary to understand their perspectives that will encourage effective implementation of the subject in schools. Teacher readiness is defined as the degree to which an individual feels confident about oneself in disseminating AI education in secondary schools.

According to Omidiora, (2022), since teacher education for AI is lacking, there is a need to prepare PD to ensure teachers can lead this discussion in classrooms, teachers of different disciplines could be trained as an alternative for specialized teachers to ensure AI is democratized for future designers and shapers of AI technologies. This assumption is corroborated by the study of Lin and Van Brummelen (2021), who co-designed lesson plans with teachers of various subjects such as history and language art, among other STEM subjects, to embed AI concepts into those subjects. The study posited that teachers'



perspectives from varying specializations to understand the factors that could influence the effective implementation of AI in Nigerian schools as confidence in teaching AI, the relevance of AI, and AI for social good among others, were adopted to propose a framework guided by the theory of planned behaviour (TPB).

Statement of the Problem

In recent years, the integration of artificial intelligence (AI) into educational settings has emerged as a promising avenue for enhancing learning outcomes and academic standards. With advancements in technology, AI-powered tools such as chatbots have gained traction in supporting students' academic endeavors by providing personalized assistance and facilitating access to information. However, according to John (2022) who says that the potential displacement of human educators by AI systems raises concerns about transparency and accountability in decision-making processes. Limited language options, academic dishonesty, biases, and lack of accountability, as well as laziness among students and teachers, are reported challenges in the adoption of AI in education. Uncertainty remains among teachers regarding how to effectively harness AI's pedagogical advantages and its impact on teaching and learning in secondary education. On this note, this study emerged to examine teachers' dispositions towards integrating artificial intelligence in secondary school curriculum using selected schools in Ado-Odo Ota Local Government in Ogun State

Purpose of the Study

The main purpose of this study was to examine the teachers' dispositions towards integrating artificial intelligence in secondary school curriculum using selected schools in Ado-Odo Ota Local Government in Ogun State. Specifically, the study sought to;

1. Examine the teachers' dispositions towards integrating artificial intelligence in secondary schools in Ado-Odo Ota Local Government in Ogun State.
2. Determine the perceptions of teachers towards the use of AI tools in secondary schools in Ado-Odo Ota Local Government in Ogun State
3. Determine the factors affecting the effective use of AI in secondary schools in Ado-Odo Ota Local Government in Ogun State

Research Questions

1. What are the teachers' dispositions towards integrating artificial intelligence in secondary schools in Ado-Odo Ota Local Government in Ogun State?
2. To what extent do teachers perceive the influence of integrating artificial intelligence on academic performance of secondary school students in Ado-Odo Ota Local Government in Ogun State?
3. What are the factors affecting the effective use of AI in secondary schools in Ado-Odo Ota Local Government in Ogun State?



Methodology

The study used a descriptive research design. This means this paper elaborates the past studies and researches undergone with these very same variables. The population for this study comprised all the teachers in Ado-Odo Ota Local Government in Ogun State. There are 27 (twenty-seven) public secondary schools in Ado-Ota Local Government Area of Ogun State.

The sample size for this study was 15 schools which were randomly selected from 27 public secondary schools in Ado-Odo Ota Local Government in Ogun State. Eight (8) teachers were purposively selected from each school. Only the teachers who had a background in computer education and ICT participated in this study. In all, 120 teachers participated in this study.

The data for this study was a questionnaire developed by the researcher to get the necessary data. The questionnaire was titled 'Teachers Dispositions towards Integrating Artificial Intelligence in Secondary School Curriculum' (TDIAISSC). The questionnaire was divided into two parts namely; personal demographic data and topic data. A four-point Likert scale in the orders of Strongly Disagreed (1), Disagreed (2), Agreed (3), and Strongly Agreed (4) to solicit meaningful information from the respondents in an organized way.

The instrument was validated by four experts from the Faculty of Education, using two experts from educational technology, one expert from curriculum instruction and one from educational evaluation. This was done for face and content validity and all the corrections and suggestions observed were effectively observed before the final copy was produced. The reliability was ascertained through the test-re-test method of estimating reliability. The two sets of scores obtained were correlated using the Pearson product-moment correlation coefficient and 0.71 was obtained.

During the research work, two main data sources are used for data collection. These are primary data sources and secondary data sources. The researcher collected original primary data from the field or sources personally to find answers to the research questions, through questionnaire administration and interviews. Secondary data is used as a complement to the primary data collected by the researcher. It is used with the view to complementing the information and explanations that the primary data source provided the researcher.

Data captured in the study was analyzed by using descriptive statistical methods. Descriptive analysis involves the use of percentages, tabulations, and graphs in analyzing data.

Results

The findings from the study were presented and analyzed chronologically based on research questions formulated.

Descriptive Analysis of the Research Questions



Research Question 1: What are the teachers' dispositions towards integrating artificial intelligence in secondary schools in Ado-Odo Ota Local Government in Ogun State?

Table 1: Teachers' Dispositions towards Integrating Artificial Intelligence in Secondary Schools in Ado-Odo Ota Local Government In Ogun State

S/N	Items	SA	%	A	%	D	%	SD	%	Remark
1	AI can improve the quality of teaching and learning in secondary schools	22	19.1	35	30.4	28	24.3	30	26.1	Negative
2	AI can reduce teachers' workload in lesson planning and assessments	31	27	42	36.5	37	32.2	5	4.3	Positive
3	The use of AI can personalize students' learning experiences	18	15.7	49	42.6	40	34.8	8	6.9	Positive
4	I feel confident in learning how to use AI tools for my teaching subject	22	19.1	48	41.7	32	27.8	13	11.3	Positive
5	I believe AI technology will positively impact my teaching effectiveness	25	21.7	39	33.9	37	32.2	14	12.2	Positive
Average (%)		20.52		37.02		30.26		12.16		Positive

Table 1 shows that average percentage of responses indicated that (20.52%) strongly agreed, (37.02%) agreed, which amounted to (57.54%) total agreement of the participants agreed on the teachers' dispositions towards integrating artificial intelligence in secondary school in Ado-Odo Ota Local Government in Ogun State. Meanwhile, (30.26%) disagreed, and (12.16%) strongly disagreed which also amounted to (42.42%) in disagreement with the integrating AI in secondary curriculum. The implication of this result is that teachers' disposition towards integrating artificial intelligence in secondary school is positive and slightly above the 50% average point.

Research Question 2: To what extent do teachers perceive the influence of integrating artificial intelligence on academic performance of secondary school students in Ado-Odo Ota Local Government in Ogun State?



Table 2: Perceived Influence of integrating Artificial Intelligence on academic performance of secondary school students in Ado-Odo Ota Local Government in Ogun State

S/ N	Items	S A	%	A	%	D	%	SD	%	Remark
6	AI tools can enhance students' understanding of difficult subjects	27	23.5	41	35.7	26	22.6	21	18.3	High
7	The use of AI can improve students' academic performance through personalized learning	33	28.7	50	43.5	21	18.3	11	9.6	High
8	AI helps in providing instant feedback on students' assignments and assessment	20	17.4	59	51.3	22	19.1	14	12.2	High
9	AI integration will improve students' participation and engagement in learning activities	31	27.0	56	48.7	21	18.3	7	6.1	High
10	AI tools are more effective in helping students improve academically than traditional teaching methods	27	23.5	39	33.9	44	38.3	5	4.3	High
Average (%)			24.02		42.62		23.32		10.04	High

Table 2 shows that (24.02%) (strongly agree) and (42.62%) (agree) were percentages of agreement with the responses which amounted to 66.64% for participants who agreed on the teachers' perception of the influence of integrating artificial intelligence on academic performance of secondary school students in Ado-Odo Ota Local Government in Ogun State. However, (23.32%) disagreed and (10.04%) strongly disagreed which amounted to (33.36%) in disagreement. This result implied that teachers perceive the influence of integrating artificial intelligence on the academic performance of secondary school students is positive and very high.

Research Question 3: What are the factors affecting the effective use of AI in secondary schools in Ado-Odo Ota Local Government in Ogun State?

Table 3: Factors affecting the Effective use of AI in Secondary schools in Ado-Odo Ota Local Government in Ogun State

S/N	Items	SA	%	A	%	D	%	SD	%	Remarks
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11.	Difficulty in understanding artificial intelligence concepts	27	23.4	49	42.7	20	17.4	19	16.6	Affecting
12.	Lack of access to digital devices or the internet on school premises	25	21.8	39	33.9	30	26.1	21	18.3	Affecting
13.	Lack of training and technical skills	38	33.1	42	36.6	25	21.8	10	8.7	Affecting
14.	High cost of data subscription	30	26.1	43	37.4	23	20	19	16.5	Affecting

Table 3 shows that percentages of strongly agree and agree of the items are greater than that of disagree and strongly disagree. The results indicated lack of understanding of AI concepts, lack of access to digital devices, lack of training skills, and high cost of data subscription affected the integration of AI in the school.

Summary of the findings

The results revealed the following major findings, the study established that

1. Teachers' disposition towards integrating artificial intelligence in secondary school is positive and slightly above the 50% average point.
2. Teachers perceive the influence of integrating artificial intelligence on the academic performance of secondary school students is positive and very high.
3. lack of understanding of AI concepts, lack of access to digital devices, lack of training skills, and high cost of data subscription affected the integration of AI in the school.

Discussion of Findings

The findings in this study revealed that there is a significant relationship between integrating artificial intelligence in the secondary school curriculum and student's academic performance in Ado-Odo Ota Local Government in Ogun State; there is a significant difference between teachers' dispositions towards integrating artificial intelligence in secondary school curriculum and the academic performance of students in Ado-Odo Ota Local Government in Ogun State, there is a significant difference between challenges associated with using AI in secondary school and integration of artificial intelligence in secondary school curriculum in Ado-Odo Ota Local Government in Ogun State.

This finding agrees with that of Ahmet & Fatih (2020) contend that the function of teachers in the educational setting will no longer be the same. To properly deploy AI in this context and encourage a collaborative and participatory mindset, teachers must obtain sufficient training. A more globalized and



linked form of education is emerging as a result of studies on the possibilities of AI-driven social and cooperative learning. Furthermore, According to Salome et al. (2023), Several of the educational tasks that are probably to be automated by artificial intelligence are creating course material and performing administrative chores. It's fascinating to observe that attitudes toward AI systems tend to be influenced by the name "AI," which is related to these perceptions. Also (Avik, 2018) concluded from their study that to overcome these challenges and provide a suitable environment for the responsible and efficient use of AI-driven education, it is crucial to adopt a cooperative and inclusive strategy encompassing government entities, educators, technology suppliers, and policymakers. The study showed a significant positive relationship between artificial intelligence and the academic performance of secondary school students in Ado-Odo Ota Local Government in Ogun State. The result shows that there is a significant relationship between artificial intelligence and the school curriculum of secondary school students in Ado-Odo Ota Local Government in Ogun State. This finding also revealed that there is significant relationship between artificial intelligence and learning in Ado-Odo Ota Local Government in Ogun State.

Conclusion

This study focused on teachers' dispositions towards integrating artificial intelligence in secondary school curriculum using selected schools in Ado-Odo Ota Local Government in Ogun State. Having so far examined the relationship between artificial intelligence and the performance of secondary school students in Ado-Odo Ota Local Government in Ogun State. It is hereby concluded that the use of artificial intelligence (AI) in secondary school curricula has demonstrated a beneficial effect on student involvement and academic achievements.

Recommendations

Based on the findings of the study and the conclusion drawn from it, the following recommendations are made:

1. Teachers should be sensitized to the importance of Artificial Intelligence in teaching,
2. Teachers should be oriented on how integration of Artificial Intelligence would promote the performance of students in the state.
3. The school management and Governments should look into the factors hinder the effective use of AI and other technology tool in Ogun State,

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