

Teachers' Perceptions of Artificial Intelligence Integration for Supporting Pupils with ADHD in STEM Education: A Study of Primary Schools in Enugu State, Nigeria

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Abstract

The paper has discussed how primary school teachers in Enugu State of Nigeria perceive the use of Artificial Intelligence (AI) in assisting pupils with attention deficit hyperactivity disorder (ADHD) in STEM (Science, Technology, Engineering and Mathematics) studies. The study adopted descriptive survey design, and the sample was 120 teachers in Nsukka, Enugu North and Enugu East Local Government Areas. Data regarding awareness, perceived benefit, and perceived challenge of AI tools regarding their role in improving STEM learning and managing behavior associated with ADHD were collected using a structured questionnaire. Analysis of data was performed in terms of descriptive (frequencies, means, standard deviations). The findings show that many teachers are optimistic about the ability of AI to personalize learning and provide more engagement to ADHD pupils. As an illustration, more than 80 percent agreed with the fact that AI-driven tools have the power to enhance attention and academic achievement in STEM. Nevertheless, most of them also stated the lack of training in AI and major obstacles including insufficient infrastructure. The results highlight that, although teachers are positive about the usefulness of AI in inclusive STEM education, effective implementation will involve funding of teacher training, infrastructure and policies. The paper ends with a conclusion and recommendations to educational stakeholders on how to deliver professional development and resources to ensure that the adaptation of AI could serve the learning needs of students with ADHD in primary schools of Nigeria.

Keywords: Artificial Intelligence, STEM Education, ADHD, Inclusive Education, Teacher Perceptions, Nigeria

Introduction

Educators worldwide are exploring how emerging technologies can improve learning outcomes for diverse learners, including those with special educational needs (Iskakova, 2023). Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders in childhood, affecting an estimated 2–7% of children globally (Ayano, Demelash, Gizachew, Tsegay, & Alati, 2023). Pupils with ADHD often struggle with inattention, impulsivity, and hyperactivity, which can hinder their academic progress, especially in structured and attention-intensive subjects like STEM. In Nigeria, like in most of the countries, the teachers at primary schools have difficulty in addressing the needs of the ADHD learners because of the lack of training and resources. A study in Nigeria, however, established that there was a lot of misconception of ADHD amongst the primary teachers even to the extent of having a negative attitude towards children with this

disorder. In that study, only 9% of Nigerian teachers thought that ADHD was manageable with medication and more than a third of the participants were not willing to admit an ADHD child in his or her classroom (Yewande, Oluwaseun, and Cynthia, 2023). This points out to great disparities in awareness and inclusion and the importance of support mechanisms in assisting teachers to serve pupils with ADHD more effectively.

Simultaneously, Nigeria has also been investing in inclusive education by having policies that allow all learners, disability or disability, to learn in normal schools. According to UNESCO, inclusive education is the process through which the capacity of the education systems to be inclusive through welcoming and reaching out to all learners is reinforced (UNESCO, 2017). This definition and contextualization emphasize that learners with behavioral disorders such as ADHD ought to be

assisted in general classrooms. Nevertheless, it is a problem of implementation. The Enugu State, as an example, has been experimental on a couple of inclusive education centers which accommodate children with disabilities, but the state has been unable to harness the funds available to offer assistive devices and learning materials to children with special needs. Most primary schools particularly those in rural or under-resourced schools do not have the special staff or technological equipment to support children with ADHD appropriately.

Artificial Intelligence (AI) in higher education has appeared as one of the potential sets of tools to seal these resource limitations gaps in a resource-limited environment. Education is one area of life worldwide that is embracing AI-based educational technologies with the likelihood of helping the educators, personalizing the learning process of the students, and making pedagogical activities more effective (Yadav, 2025). AI in education includes such technologies as intelligent tutoring systems, adaptive learning, student-inquiry chatbots, data analytics dashboards, and so on. Such tools may deliver customized learning and immediate feedback, which may be useful to students who require additional assistance. Importantly, UNESCO's 2019 *Beijing Consensus on Artificial Intelligence in Education* emphasizes humanistic and inclusive values, urging that AI be used to promote human agency, inclusion, and equity in (UNESCO, 2019). In line with this, AI integration should aim to help all learners – including those with ADHD – to achieve their full potential in the classroom.

Studies indicate that AI interventions are of great value to learners with attention and learning disabilities, especially those with ADHD as they offer adaptive feedback that helps one to maintain more attention, higher instructional content, and use AI-inspired games or cognitive training applications that enhance attention and decrease impulsivity (Gil & Selman, 2019). The examples of these developments show that AI could be used in academic improvement of such subjects as mathematics and science, as well as providing behavioral and cognitive assistance, such as adjustable pacing, focus-reminders, and adaptive scaffolding (Hwang & Tu, 2021). Nevertheless, the effectiveness of AI application in schools will always be determined by the perception, preparedness, and willingness of teachers to embrace them. Teachers still play the key role in successful educational innovation, and how easily AI is accepted by teachers is greatly

affected by the sense of usefulness, ease of use, and proper training. The Teacher Task Force of UNESCO (2023) suggests that the introduction of AI into the classroom and its design should involve teachers in a meaningful way because AI cannot take over such vital human qualities as empathy, moral judgment, and situational knowledge. The report also cautions that the adoption of AI will not close the inequalities, particularly those between well-resourced and under-resourced schools without support. Hence, the perception of teachers and the assurance that they get intensive training and continued guidance are very important in the successful and fair implementation of AI in education.

Nigeria is also adopting digital learning and artificial intelligence (AI) with NERDC revising national curricula to incorporate digital literacy, artificial intelligence, and robotics, and platforms such as uLesson and Mavis Computel are already showing how AI can be used to improving STEM education. A study of an AI-assisted intervention in Akwa-Ibom State indicates that students who used a generative AI tutor had better academic performance and teachers involved moved towards being skeptical to acknowledging the usefulness of AI (Sunday et al, 2025). Despite these advances, the perceptions of the Nigerian primary school teachers regarding the use of AI specifically to assist pupils with ADHD in STEM education have remained little known since the available research has centered on the use of ICT in general or the attitude of teachers towards ADHD students. This paper thus analyses the perceptions of teachers in Enugu State which have both urban and rural settings since it is an appropriate environment to study due to the central role of STEM in national development and the unique difficulties it presents to learners with ADHD.

The specific objectives of the study are: (1) to assess teachers' awareness and familiarity with AI tools for education; (2) to evaluate their perceptions of the usefulness of AI in enhancing STEM learning outcomes and managing classroom behavior for pupils with ADHD; (3) to identify perceived challenges or concerns teachers have regarding AI integration (such as training needs, infrastructure, or potential downsides); and (4) to examine whether teacher characteristics (like years of experience, digital competency, or prior training) relate to their perceptions of AI. These considerations will make the study add to the body of knowledge regarding



preparedness and the willingness of ready teachers to engage AI in inclusive teaching.

Finally, the insights into how teachers perceive the situation will assist in shaping the stakeholder initiatives, including the government and NERDC, school administrators and ed-tech developers, on how to develop the interventions, training, and policies that can enable successful application of AI in inclusive STEM education. In case the overall perceptions of teachers in Enugu State are positive but there is a lack of the necessary resources, the strategies must aim at acquiring the resources and educating them. In case there is considerable level of doubt or lack of knowledge, awareness and pilot demonstrations may be required. The results of this study can inform the process of implementing AI-based educational innovations not only in Enugu or Nigeria, but in other places, where teachers are the key actors in implementing new solutions to help students with ADHD and other special needs.

Literature Review

ADHD in the Classroom and the Nigerian Context

The symptoms of inattention, hyperactivity, impulsiveness, which are typical of ADHD, usually disrupt the academic and social performance of a child (Colomer et al., 2017). At the classroom level, pupils with ADHD might not be able to attend lessons, multi-step instructions, or sit still and stay silent during classroom activities (Friel, 2022). The difficulties may be especially acute in STEM, which often presupposes a long term concentration, the sequentially of thinking (when solving a math problem or using an experiment), and following the steps. Children with ADHD do not learn as well as they can under normal conditions and may also cause disruptive behaviors in the entire classroom unless provided with proper support (Gaastra et al., 2016).

Teacher knowledge and disposition to ADHD are significant in the way such students are handled. Regrettably, studies in different low- and middle-income nations indicate that a lot of educators do not know much about ADHD and possibly have misconceptions about this condition (Diaba et al, 2015). In Nigeria, Yewande and Oluwaseun (2023) observed that a good number of primary school teachers did not assume that ADHD was a medical condition, which could be treated as a medical disorder, with only 16.7 percent of respondents approving that psychological interventions could help to address it. Even one out of four teachers in that study

claimed that he/she would not deal with a child suspected of having ADHD. This is a negative attitude that may not be due to absence of training and exposure, which becomes a hindrance to inclusive education. They stress the necessity to enhance teacher training in special needs education - the focus which is also supported by the national policies. In 2015, the National Policy on Special Needs Education expanded the definition of the term special needs to cover behavioral disorders, learning disabilities, and other non-physical exceptionalities and therefore, formally accepted such conditions as ADHD to be accommodated in the education system. In the meantime, the National Policy on Inclusive Education (2017) recommends that teacher training curricula be changed and resources be made available to allow all learners (not only those who learn differently slower or faster than average learner and those with disabilities) to succeed in mainstream schools. As a matter of fact, though, numerous teachers in the Nigerian regular primary schools have not been equipped with proper pre-service or in-service training about dealing with ADHD or any learning/behavioral disorders (Yongmei, 2024). This disparity usually leaves educators ill-equipped to deal with such students and this may cause frustration to both educators and students. In Nigeria, STEM education is also confronted with other systemic issues, which overlays with the requirements of ADHD students (Olatunji et al., 2023). One of the key problems is resource constraints, most primary schools do not have science laboratories, math manipulatives, or even enough textbooks (Pacadaijen, 2024). Classes can be large, and individualized attention is scarce.

AI in Education: Personalization and Support for Diverse Learners

The existing body of research demonstrates that AI-powered tools are valuable sources of academic and behavioral assistance to learners with attention problems, such as ADHD pupils. The studies of Intelligent Tutoring Systems (ITS) have shown that AI has the capacity to provide a personalized learning experience and adjust difficulty, pacing, and modality in real-time, according to learner performance, which results in better academic results due to such features as real-time corrective feedback and scaffolding (Lin et al., 2023). In the case of ADHD pupils in particular, these systems assist in keeping the attention span longer as they introduce content in shorter blocks, alternate visual, auditory, and textual forms and

provide instant feedback to remain focused (Sarshartehrani, et al, 2024). The other empirical findings are that AI-based assistive tools predictive text, grammar feedback, and speech recognition assist in learners who exhibited disorganized writing and lengthy written assignments (Meroua, & Noudjoud, 2024). Timely prompts to redirect off-task behavior are also provided by emerging AI applications based on eye tracking and engagement monitoring (Yambal & Wayakay., 2025). Clinical evidence also indicates that AI-based cognitive therapy interventions have the potential to minimize inattentiveness and impulsiveness in ADHD children (Beg & Verma, 2024). Virtual laboratories and games based on AI have been discovered to enhance concentration, accuracy, and motivation in the field of STEM education due to the systematic step-by-step approach and real-time feedback (Javali et al, 2025). Overall, the reviewed literature suggests that AI systems can be effective in terms of personalization of instructions, facilitating engagement, and behavioral control and can be used with various learners, including patients with ADHD.

Teachers' Perceptions of AI and Barriers to Integration

Evidence-based studies indicate that perceptions of the teachers are at the core of AI integration in the classroom, and the perceived usefulness and ease of use are the significant predictors of its adoption (Yao and Wang, 2024). Researchers note that a significant portion of educators admit that AI can automatize administrative processes, provide individual learning opportunities, and create learning analytics that can help to decrease the workload and increase the accuracy of instruction (Pedro et al, 2019; Igbokwe, 2023). The advantages are especially applicable in such a situation as Nigeria where big classroom groups do not provide time to receive feedback and one-on-one teaching. Nevertheless, the three common obstacles mentioned in literature include ineffective infrastructure, poor electricity, a lack of internet, and a lack of devices at schools in the general populace, particularly, in rural regions (Mehdaoui, 2024). These inequalities are considered as contributing to digital inequality and may prompt teachers to perceive AI as not realistic or hard to apply even after acknowledging its theoretical importance.

Another important determinant that will affect AI adoption is teacher training and professional competence. Nigerian and other developing

background studies show that many teachers believe that they are not adequately prepared to use AI and apply it effectively because of the deficit of exposure in their teacher education coursework and absence of professional development (Pokrivčáková, 2019). The fear of being displaced, pedagogical effectiveness, data privacy, technical reliability, and the concern with the effectiveness of ICT also contribute to teacher reluctance (OECD, 2021; UNESCO Teacher Task Force, 2023). Overall, the literature makes an unbiased assessment the educators are aware of the possibilities provided by AI in improving personalized and inclusive learning, but the successful implementation requires better infrastructure, extensive training, favorable policies, and strengthening of teacher authority.

Methodology

Research Design

This research adopted a descriptive survey design to quantitatively assess teachers' perceptions of AI integration for supporting pupils with ADHD. The descriptive approach is appropriate because the goal was to obtain a snapshot of the current opinions, experiences, and self-reported behaviors of teachers regarding the topic, rather than to test an experimental intervention. The survey design allowed for gathering data from a relatively large sample of teachers across different locations within Enugu State, ensuring that the findings would be generalized at least to similar contexts within the state.

Population and Sample

The target population included primary school teachers in Enugu State who teach the subject of STEM (mathematics, basic science and technology, etc.). The study based on the multi-stage sampling method targeted three Local Government Areas (LGAs) with a combination of urban and semi-urban schools in the state of Enugu, Nsukka, Enugu North, and Enugu East. These LGAs were chosen in the first stage in order to incorporate the educational areas surrounding a university town (Nsukka) and the state capital (Enugu North/East) where technology awareness could be stronger and peri-urban areas where other issues could be involved. Simple random sampling was employed in the second step whereby schools of primary publics in each LGA were selected (about 5-6 schools per LGA). The last sampling involved teachers in the sampled schools. The teachers that taught Primary 4-6 classes (upper primary, where

the STEM subjects are more formalized) were invited to participate.

The sample size of the teachers was 120, consisting of 40 teachers in every three LGAs. This number of samples ($n=120$) was chosen to be manageable in terms of in-depth surveying and appropriate enough in terms of simple statistical studies. Among the 120 respondents, 53% were female and 47% male, which is the general distribution of primary teachers in the region. The age was between twenty to above fifty years with an average age of mid thirty years. The latest teachers had an experience of at least 1 year of teaching whereas most of the veterans had a 27-year experience with an average experience of approximately 10 years of teaching ($SD \approx 6$ years). Most of the teachers (about 60 percent) had the National Certificate in Education (NCE), the lowest teaching credential in Nigeria, and about 35 percent had a Bachelor of Education (B.Ed.) or other degree or training. These characteristics (as found in Table 1 below) insinuate that the sample is distributed across a spectrum of experience level and professional experiences.

Data Collection Procedure

The researchers along with two trained research assistants went to both selected schools after securing the required approval of the State Universal Basic Education Board (SUBEB) and school principals. The objective of the study was explained to the teachers, and their confidentiality was guaranteed - the answers remained anonymous and were available

only to conduct research. Informed consent was obtained. The questionnaires were mostly self-administered: teachers filled them out on paper during a free period or after school hours. However, for a few teachers with tight schedules, the research assistants conducted the survey in an interview format (reading out the questions) to ensure completion. This also helped in cases where clarifications were needed (e.g. explaining what “AI” means – though we provided a simple definition at the top of the questionnaire: “AI refers to smart computer programs that can learn and make decisions, like a tutor software that adapts to a student’s needs.”). Of the 120 questionnaires distributed, all were returned; 4 had some missing responses in Section C or D, but the overall response rate was 100%. The few missing data points were handled by mean substitution (for instance, if a teacher answered 9 out of 10 perception items, the mean of their 9 responses was used for the tenth). Given the small proportion of missing data, this had minimal impact on results.

Data Analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS). The frequency, percentages, means, standard deviations were used to summarize the data of the demographics and responses of teachers to Likert-scale items. Mean scores exceeding 3.5 depicted more positive perceptions of AI, between 3 and 2.5 was considered neutral, and scores less than 2.59 depicted negative perceptions of AI.

Results

Table 1: Demographic and Professional Characteristics of Respondents (N = 120)

Characteristic	Category/Statistic	Frequency (%)
Gender	Male	56 (46.7%)
	Female	64 (53.3%)
Age (years)	Mean (SD)	35.4 (8.7)
	Range	22 – 52
Teaching Experience	Mean years (SD)	9.6 (6.3)
	1–5 years	30 (25.0%)
	6–10 years	36 (30.0%)
	11–20 years	38 (31.7%)
	21+ years	16 (13.3%)
Highest Qualification	NCE (National Certificate of Education)	72 (60.0%)
	B.Ed. or Bachelor's degree	42 (35.0%)
	Postgraduate (PGDE/M.Ed.)	6 (5.0%)
Prior AI-Related Training	Has attended any workshop/course on AI	27 (22.5%)
	No prior training in AI	93 (77.5%)
ICT Competency Self-Rating	Low (only basic use)	38 (31.7%)

(e.g. computer skills)	Moderate	56 (46.7%)
	High (proficient)	26 (21.6%)
LGA (Location)	Nsukka (urban/semi-urban mix)	40 (33.3%)
	Enugu North (urban)	40 (33.3%)
	Enugu East (semi-urban)	40 (33.3%)

As can be seen in Table 1, approximately a fifth of the teachers had gone through some type of AI or educational technology training. This might be seminars about digital literacy or workshops about the use of e-learning platforms (not necessarily AI-based, as AI in education is still in its infancy). Most of them were not exposed to official training on AI tools. The teachers rated themselves ICT competent, with approximately 22% of them perceiving themselves as highly competent (they are comfortable using computers and new software), almost half of them as moderately competent (they are able to perform simple tasks and are willing to learn more), and a third of them as having low competence (they are not very knowledgeable about using computers). These data on training and ICT skills help to put the perspective of perceptions of teachers towards AI in the context of more trained or better technology skills, as teachers with more training or better technology skills may be more positive and more certain about the integration of AI.

Instrumentation

A researcher-created structured questionnaire called: Teacher Perceptions of AI in STEM for ADHD Support (TPAI-SAS) was used to gather data. The instrument consisted of four parts that consisted of close-ended and limited open-ended questions, where the quantitative analysis dealt with the former. Section A collected demographic and background information like gender, teaching experience, qualification, familiarity with ICT, and previous experience with AI tools, experience when teaching pupils with ADHD. Section B evaluated the knowledge and awareness of teachers regarding AI in education by questions related to the level of awareness of AI-based tools and the awareness of the utilization of these tools. Section C, the main part of the instrument, used a 5-point Likert scale to assess the attitudes to the usefulness of AI in supporting the ADHD pupils during STEM, covering such dimensions as individualized learning, engagement, monitoring student behavior, and the workload of a teacher. Section D addressed perceived difficulties and readiness, with questions of training adequacy, barriers in the infrastructures, curriculum

alignment, and willingness to use AI, and with an open-ended question on barriers to using AI. The tool has been validated on an expert level by educational technology and special education specialists to achieve clarity and relevance to the content, and modifications were made to make the technical terminology simpler to understand. Ten teachers were used in a pilot test to determine the clarity of items and analysis of reliability result showed Cronbach's alpha coefficients of 0.88 in the usefulness scale and 0.81 in the challenges/preparedness scale, which depicts high internal consistency and measurement reliability.

Overall Awareness and Exposure to AI

The survey has demonstrated that the awareness of AI in education among teachers is new but not widespread. Only a relatively small percentage of respondents (around 65 percent) said they had been exposed to the term artificial intelligence in general, and fewer still (around 30 percent) could name an example of an AI learning tool. Only 15% specifically knew intelligent tutoring systems or similar AI-driven learning software. This suggests that while AI is a buzzword many have come across, detailed knowledge of how it applies to classroom practice is limited. About one-fifth of the teachers (22.5%, see Table 1) attended a training or workshop that touched on AI or advanced EdTech, often as part of broader ICT training. These teachers tended to be from the urban Enugu North area or connected to private

Interestingly, around 40% of teachers reported that they currently use ICT (Information and Communication Technology) tools like educational videos or interactive software in their teaching of STEM subjects. However, these were mostly traditional computer-based tools (PowerPoint presentations, digital textbooks, etc.) rather than adaptive AI systems. The baseline familiarity is important context: many teachers are comfortable with basic EdTech, but true AI tools are still a novelty in these primary schools.

Another relevant finding is that about one-third of the teachers indicated they had taught at least one pupil whom they knew or suspected to have ADHD (though formal diagnoses in primary schools

are rare). There was no difference found in the perception of AI in this subgroup of teachers compared to those who had no experience of ADHD but qualitatively they said that they needed a tool that will assist them in controlling the attention and behavior.

Descriptive Statistics of perceptions.

The answers of teachers to the Likert-scale questions give a rather positive picture regarding the usefulness of AI perceived by teachers, but there are also relevant concerns related to the preparedness and the resources. Table 2 presents crucial items of perception and the mean rating of these items and the percentage of teachers who agreed (responses Agree or Strongly Agree).

Statement	Mean (SD)	% Agree/Strongly Agree
AI can provide personalized instruction tailored to each pupil's needs (including those with ADHD).	4.32 (0.79)	85%
Integrating AI in STEM lessons can improve the engagement of pupils with ADHD by making learning more interactive.	4.45 (0.68)	88%
AI-driven tools can help monitor student progress and alert the teacher when an ADHD pupil is struggling or off-task.	4.10 (0.84)	78%
AI can help improve academic performance of pupils with ADHD in subjects like mathematics and science.	4.20 (0.73)	80%
I feel confident that I could effectively integrate AI tools into my teaching.	2.95 (0.96)	42%
I have adequate training to use AI in my classroom.	2.10 (0.88)	20%
Lack of infrastructure (computers, internet) in my school is a major barrier to AI integration.	4.57 (0.65)	91%
I would be willing to adopt AI-based tools if provided with sufficient training and support.	4.63 (0.57)	95%
Using AI for routine tasks (like grading or practice drills) can reduce my workload.	3.88 (0.81)	70%
I am concerned that AI tools might malfunction or provide incorrect guidance to pupils without me noticing.	3.35 (1.02)	45%
AI should only supplement, not replace, traditional teaching methods for pupils with special needs.	4.50 (0.60)	90%

Table 2: Perception of teachers regarding the use of AI to support learners with ADHD in STEM.

Based on Table 2, the results indicate that the primary school teachers in Enugu State were largely in support of the perceived benefits of artificial intelligence (AI) in supporting STEM learning in pupils with ADHD. Most of them felt that AI could customize learning (mean = 4.32; 85% agreement) and enhance pupil engagement (mean = 4.45; 88% agreement), which led to hope of interactive, adaptive technologies that have the potential to maintain attention and better learning outcomes. On the same note, 80% of the teachers stated that AI had the potential to positively influence academic performance and 78% stated that it may help monitor progress, demonstrating an appreciation of data-driven insights useful to take timely action. Notwithstanding this hope, the level of confidence and preparedness was low: only 42% were sure about the integration of AI (mean = 2.95), and 80 percent of them admitted insufficient training (mean = 2.10), which is why capacity building should be considered. The greatest limitation was found to be resource constraints, with 91% reporting a lack of computers and internet access to be a significant limitation (mean = 4.57) as has persistently been the case in Nigeria regarding the digital divide in education. Positively, the desire to embrace AI was extremely high with 95 percent of the respondents stating that they were willing to embrace it given that proper support was offered (mean = 4.63) and this implies that there are solid grounds under which future adoption efforts can be undertaken. Although 70 percent felt that AI had the potential of helping to decrease the amount of work (mean = 3.88), almost 45 percent were concerned about possible failures or fake news (mean = 3.35). Remarkably, it was confirmed by 90% that it is the AI that should not replace, but rather complement, teachers (mean = 4.50) which underlines their belief in the retention of the human aspect of teaching. In general, these findings present the teachers as optimistic and practical both in terms of being excited about the transformative power of AI and aware of the infrastructural and training disruptions that have to be overcome to allow classroom applications.

Discussion

The results of this research can be a good guide to the understanding of the perspective of teachers regarding the introduction of Artificial Intelligence to help the pupils with ADHD in primary STEM education. In general terms, the findings indicate a positive but pessimistic optimism in teachers. This is a reflection of the trends in the rest of the world where teachers recognize the promise of AI, but are also still conscious of the practical aspects and need to support (Yadav, 2025). In this debate, we explain the findings based on existing literature, discuss their implications on practice and policy and how the perceptions of these teachers can affect the future of AI in inclusive education in Nigeria and other comparable settings.

Among the most noteworthy results, we can mention the fact that most of the teachers participating in our sample are of the opinion that AI might have a positive impact on learning in ADHD learners. They especially agreed that AI would be able to offer tailored and interactive learning experiences, which is alignable with the theoretical potential of AI in education. The advantage of AI tutors is well-documented, as personalization offers the possibility to fill learning gaps due to its ability to dynamically adapt to the needs and speed of the learner. The fact that the agreement between the teachers (mean 4.3/5) with respect to such personalization indicated that the teachers intuitively understand the importance of personalization of ADHD pupils who tend to require individual attention. This is in line with previous studies that highlight individualized support as a crucial factor in ADHD learners, who otherwise would be left with no option but falling through the cracks in a one-size-fits-all classroom (Yewande et al, 2023). Furthermore, the high expectation of teachers that AI can enhance the engagement is quite consistent with the research results that interactive AI-based activities may ensure more student attention than passive learning (UNESCO, 2023). As an illustration, an educational game run by an AI that encourages advancement may encourage an ADHD student to work longer than a conventional worksheet may. These results support the idea that teachers appreciate those dimensions; teachers perceive AI as a type of panacea to the engagement issue that is commonly manifested in the STEM topics. The teachers' stance

that AI could improve STEM achievement for ADHD pupils echo both anecdotal successes and research – for instance, Sunday et al (2025) reported significant learning gains in Nigeria through an AI tutoring intervention, demonstrating that AI can boost outcomes in core subjects when integrated into teaching. Our teachers appear aware that similar gains could be possible in their context, which is a positive mindset for innovation adoption.

The results indicate that the teachers in Enugu State are aware of the potential of AI to benefit the pupils with ADHD in the STEM learning area but still point out that the weak infrastructure (poor electricity, a limited number of devices and the unreliability of internet) are the primary barriers to the implementation. The issues indicate the national evidence that online education in Nigeria remains limited by insufficient technological equipment (Igbokwe, 2023). The undertraining of teachers on AI also proved to be an influential aspect that formed their perception in line with previous studies that teacher competence, but not intentions, is the most predictive factor of adopting technology (Pedro, 2019; Mehdaoui, 2024). Their change in attitude following the simple exposure is a positive trend in the world literature showing that a professionally designed development enhances confidence and diminishes anxiety towards emerging technologies (Pokrivčáková, 2019). Notably, educators perceived AI as an instructional aid in the classroom, not a direct substitute for a teacher, which is in line with the global opinion that AI complement, and not replace, human teaching (OECD, 2021). They also thought that AI would help learners customize their learning and assist ADHD learners with adaptive feedback, which reflected in the current evidence of AI-assisted learning to help students with attention problems (Pacadaljen, 2024). All in all, educators were willing to embrace AI when the necessary training, infrastructure, and curriculum-related tools are offered, which, again, supports the recommendations of UNESCO and NERDC about the systematic teacher training and enabling conditions of equitable AI use in the schools.

Conclusion

The study found that primary school teachers in Enugu State generally hold positive and forward-looking perceptions about integrating artificial intelligence (AI) into STEM education to support pupils with attention-deficit/hyperactivity disorder

(ADHD). Teachers recognize AI's potential to personalize instruction, sustain pupils' attention, and foster inclusive learning by adapting lessons to individual needs—especially for learners who struggle to stay engaged in traditional classroom settings. Nonetheless, with the level of enthusiasm being quite high, the majority of teachers admit that there is a considerable gap between their theoretical acceptance of AI and their actual readiness to apply it in practice. Their complaints are a lack of training opportunities, insufficient ICT infrastructure, lack of reliable power supply and lack of internet access as the key obstacles to the efficient use of AI-based tools. In spite of these limitations, educators are positive and believe that AI would be a beneficial tool, but it should not substitute the human teacher, but complement him. They share a great desire to learn and embrace AI technologies provided that adequate training, mentoring and institutional backing is conducted. The research also demonstrates that educators, who are more competent in ICT or who have already been exposed to AI, are more confident in its application in the classroom so that peer mentoring and specific professional development may reinforce overall preparedness. Notably, the views of teachers are consistent with national and international objectives of inclusive education since AI can be considered as a tool to enhance equality and enhance children with special needs learning outcomes. The results thus emphasize that incorporating AI in the primary education of Nigeria requires policymakers to be strategic in terms of capacity building of teachers, technology infrastructure as well as enabling structures that enable teachers to be co-creators of AI-enabled learning environments.

Recommendations

The paper is based on a complex of recommendations that should help to ensure that the introduction of artificial intelligence (AI) into STEM education is successful in Nigeria to assist ADHD pupils and other learners with special needs. First, the infrastructure of schools, including the ability to rely on electricity and the internet and digital equipment, should be significantly invested to provide an enabling environment to use AI to support the learning process, especially in the form of public-private partnerships and pilot versions of AI-enabled classrooms in the local government regions. Second, it is necessary to implement continuous teacher training and professional development that does not focus on

theoretical knowledge but on direct work with AI tools, instruction in the role of a train-the-trainer, and the inclusion of AI literacy in the professional development plans. Third, pilot tests should be attempted on a smaller scale before national implementations, which would enable analyzing and adjusting it according to the quantifiable results (student participation and teacher acceptance). Fourth, AI to be used should be localized and in-text with the Nigerian curriculum to make it culturally-relevant and include language and adapt to inclusive pedagogy that accommodates ADHD students. Fifth, schools must be provided with continuous technical support in the form of special ICT officers and helpdesks to ensure reliability and confidence of the teachers. Moreover, it is essential to create a positive school culture in which administrators are the first supporters of AI use, educators are encouraged, and testing is promoted to be successful in the long run. The policy level should be provided with clear structures and ethical standards that can protect the privacy of data, guarantee the quality of their products, and support the professional agency of teachers. Lastly, community of practices led by teachers will promote collaboration, peer mentoring, and learning. Taken together, such measures can turn the constructive perceptions of the teachers into sustainable, fair practice. The national approach grounded on the preparation, equipping, supporting, and empowering of teachers will help make AI the real factor that would facilitate inclusive STEM learning and positively influence the learning outcomes of all students, including those with ADHD.

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