

APPRAISAL OF IMPACT OF ARTIFICIAL INTELLIGENCE IN PROMOTING EFFECTIVE TEACHING AND LEARNING AMONG SECONDARY SCHOOLS STUDENTS IN ENUGU STATE

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Abstract

The study centers on the evaluation of impact of artificial intelligence in the promotion of effective teaching and learning among secondary school students in Enugu State, Nigeria. Two research questions and one hypothesis were formulated to guide the study. The study adopted descriptive survey research design. The population for the study was 8,414 teachers and principals teaching in all 292 public secondary schools in Enugu State comprised of 8122 teachers and 292 principals. The study adopted proportionate stratified random sampling technique to sample 841 respondents for the study. The study comprised 29 Principals and 841 teachers for the study representing 10% of the total population. Researchers used questionnaire as the only instrument for data collection. The instrument was face validated by three experts in the Faculty of Education, Enugu State University of Science and Technology. The findings of the study revealed that Artificial intelligence (AI) has great impact in promoting effective teaching and learning in secondary schools in Enugu State as opined by the respondents in the following ways: such as Encourage personalized learning among the students, facilitate consultation and administration and administrative efficiency, improve parent-based accessibility in school affairs etc. Based on the findings of the study, it was recommended among others that government should enforce the utilization of Artificial Intelligence in every public secondary school in Enugu State to promote effective teaching and learning.

Keywords: Artificial intelligent (AI), effective teaching and learning, classroom instruction

Introduction

The appraisal of the impact of Artificial Intelligence (AI) on teaching and learning has become a pressing issue in the Nigerian education system, particularly at the secondary school level in Enugu State. As schools continue to search for innovative ways of improving instructional delivery and learning outcomes, AI offers new possibilities for automating routine academic tasks, enhancing personalized learning, and supporting teachers in delivering more effective lessons (Agbo, 2024; Russell & Norvig, 2020). Rather than focusing solely on traditional methods of instruction and assessment, AI introduces advanced tools that can grade assignments, design tests, provide instant feedback, and adapt learning materials to the needs of individual students (Kaplan & Haenlein, 2019). By simulating human intelligence through algorithms and pattern recognition, AI is gradually transforming classrooms into technology-driven learning environments where efficiency, accuracy, and innovation are prioritized (Agbo, 2024; Russell & Norvig, 2020). Historically, AI was formally introduced in 1956, and early research focused on solving algebraic problems and simple logical tasks (Nilsson, 2010). Today, the focus has shifted to enabling computers to engage in meaningful conversations, make reliable predictions, and perform tasks that were previously the exclusive domain of human teachers (Kaplan & Haenlein, 2019). This paper examines the extent to which AI contributes to promoting effective teaching and learning among secondary school students in Enugu State, highlighting its opportunities, challenges, and implications for the future of education.

Eze (2023) observed that artificial Intelligence (AI) has gains rapid response in all aspects of human life. Day-to-day life has changed since the wide-spreading adaptability of AI. Through the use of AI tools and techniques, researchers and AI scientists are making their unstinting efforts to make human life more comfortable and technologically advanced researchers have been exploring the potential of artificial intelligence technology in classroom settings. Recently, major tech firms like Amazon, Google, and Facebook have spent millions on AIED research and development, joining other well-funded AIED startups like Knewton and Carnegie Learning. Meanwhile, the \$15 million Global Learning XPrize is offering a reward for software that helps students take charge of their own education, which is essentially the same thing as AIED. Meanwhile, AI is being included in the curricula of certain traditional institutions as a new subject area, improving online tutoring, and being studied as a means of boosting teacher training. In a nutshell, the market for artificial intelligence (AI) in education is expected to increase at a compound annual rate of 32 percent between now and 2026, reaching about \$6 billion in 2022 (Idowu 2021). The education sector adopts Information Communication Technology (ICT) landscapes and AI is one of the most used ICT paradigms in the education industry. ICT in the education sector has been hyper-adopted. Over the past decade, an enormous increase in Massive Online Open Courses (MOOCs) demonstrates society's acceptability of online learning phenomena. These MOOCs s not only facilitate students by learning new technologies but also brighten their resumes by giving them a certificate, Nano degrees, and even diplomas. MOOC's massive online tutoring platforms like Preply, Khan academy, code hero, and many more indicate that the market trend of online learning is increasing.

Although many of us may have gained some limited understanding or experience of AI in popular applications through the media or in our day-to-day lives, the use of AI in educational settings continues to be a mystery for many (Ike 2022). The thought process automatically generates a great number of unanswered questions. How exactly does artificial intelligence (AI) operate in schools, and what precisely can it do there? How is student privacy protected while using AI, which requires a significant amount of data? What kind of long-term impact will artificial intelligence have on the jobs of educators? Are the advocates of AIED making more claims than they can reasonably deliver? What is the influence of AI on students' performance? Are there social consequences for adopting AI in the educational sector?. Ezeobi (2022) defined AI as the process through which robots match complex patterns and learn as they do so. The nature of AI may be understood in a variety of ways. Two examples of AI are known. AI with rule-based and AI with machine learning-based evaluation methods are the two examples. The former generates a suggestion or a solution using decision-making rules which is the most fundamental shape in this sense. An intelligent teaching system (ITS), which can provide students with detailed and targeted feedback, is an illustration of this sort of technology. Since machines can truly learn and improve over time, machine learning-based AI is more potent Ikedi (2023). The purpose of this study is to look into how artificial intelligence (AI) can be used to improve the learning and teaching process. It provides examples of how AI technology can assist education systems in using modern tools to improve educational equity and quality. The study provides real-world examples of how AI is being used in educational institutions.

Leveraging on AI towards improving teaching and Learning Process, Ikedi (2023) opined as follows:

In the last decade, the effectiveness of traditional education has been repeatedly questioned. College dropout rates are at an all-time high, a testament to disinterested students and low student morale. According to industry experts, the main reason for the school's failure to keep students interested in the "one-size-fits-all" methodology 16. Fortunately, advances in AI technology, especially in areas of Big Data and Machine Learning, have already yielded

results. Several startups have developed tools to make learning more enjoyable for learners and more custom-made to fit their needs. This is largely accomplished by designing a personalized learning experience based on the abilities and preferences of the students. Personalized learning is a learning experience that is tailored to each student's specific needs. Learning elements such as learning speed, material, series, technologies, quality, instructional approach, instructional materials, and other aspects of personalized learning can be tailored to each child's needs and learning goals.

Adapting learning to meet the requirements of individual students has been a concern for educators for years, but AI could provide a level of differentiation that is unthinkable for teachers who must handle students in each class. Several companies, including Content Technologies and Carnegie Learning, are currently developing intelligent instructional design and digital platforms that use AI to provide learning, testing, and feedback to students from pre-K to college level, identifying gaps in knowledge and redirecting them to new topics when appropriate¹⁸. As AI advances, it may be conceivable for a machine to scan the expression on a student's face that suggests they are trying to understand a subject and alter a lesson to respond to that. Customizing curricula to meet the requirements of each student is not feasible now, but it will be for AI-powered robots (Eze 2024). Obi (2020) equally noted that AI can assist in the improvement of collaborative learning. One of the most groundbreaking elements of computer-supported collaborative learning occurs when participants are not physically present in the same area. It gives students a variety of options for when and where they want to learn. Online asynchronous discussion groups are crucial in computer-supported collaborative learning. AI systems monitor asynchronous discussion groups using AI techniques like machine learning and shallow text processing, providing teachers with information on learners' discussions as well as help for encouraging learners' engagement and learning. AI may aid customized learning in a variety of ways. AI can assist in creating a more professional atmosphere for dealing with students who are struggling. Teachers spend a lot of time at school on regular and administrative chores like preparing assignments and addressing frequently requested inquiries. A dual-teacher approach, which includes a teacher and a virtual teaching assistant who can take over routine tasks for the instructor, frees up teachers' time, allowing them to focus on student supervision and one-on-one contact. With the help of AI, adaptive learning platforms can construct scientifically generated profiles of each learner, and big data, with its pervasive informational power, assists in the construction of a pedagogical profile for students. The objective of attaining a particular learning outcome can be attained via a personalized path. Students can work at their own pace and advance when they have mastered a concept when using adaptive learning platforms that are aided by artificial intelligence.

Computer Assisted Learning (CAL) sector develops digital and AI-based alternatives to help students learning processes. An AI solution may assist in mapping each student's specific learning plans and trajectories, as well as their strengths and weak-nesses, topics that are more expensive to integrate or learn, as well as their learning preferences and activities. By using algorithms to help students traverse diverse curriculum routes, AI can personalize learning and increase chances for students. Recent studies have shown that Intelligent Tutoring Systems are among the new technical alternatives for enhancing educational learning in poor nations AI has previously been used in education, particularly in skill development tools and assessment systems. As AI educational solutions improve, the aim is that AI will be able to cover gaps in learning and teaching, allowing schools and instructors to accomplish more than ever before. AI may increase efficiency and personalization, and reduce administrative processes, giving instructors more time and flexibility to give understanding and adaptability of human characteristics that robots lack. By combining the finest qualities of machines and instructors, the objective of AI in education is for them to collaborate to achieve the best results for children. Because today's kids will need to work in a world where AI is a reality, we must

prepare them as a teacher or school administrator, you may be curious about how automated software for special education works. Robotic Process Automation (RPA), does not suggest that robots will replace instructors in the classroom. In actuality, automation does not substitute for a process. Instead, automation enhances a process. In layman's terms, robotic process automation (RPA) is yet another method for developing efficient work processes using algorithms and software robots (Bots) capable of doing tasks without human intervention: Every digital gadget utilizes algorithms to some degree. In automated software for special education, an algorithm is a collection of exact instructions that instruct a device on how to accomplish a job or process data.

According to a McKinsey (2019), teachers were spending less time on direct teaching and engagement and more time on preparation, assessment, and administrative chores. Concurrently, it has been discovered that technology may assist instructors in reallocating 20–30% of their time to student learning. By incorporating AI educational technology, instructors will not only be able to be more productive and spend less time on repetitive duties, but they will also be able to interact with their students on a deeper level. Having additional time and energy to foster a better and more powerful connection between a student and a teacher is likely to enhance a student's learning outcomes and raise their chances of success. Alabi (2021) opined that Social networking sites (SNSs) use social media to link students and instructors. Re-searchers have underlined the value of utilizing social networking sites (such as Face-book) to extend learning opportunities outside of the classroom, monitor students' well-being, and strengthen student-teacher relationships. Various academics have investigated the function of social media in education, outlining its influence on student and teacher learning as well as scholarly communication. They argue that using social media may promote students' active learning, cooperation abilities, and connections with communities outside of the classroom. Chatbots may also be found on social media platforms thanks to various AI algorithms. They are also known as conversational agents or dialogue systems.

The integration of Artificial Intelligence (AI) and big data into education promises to transform teaching and learning, offering unprecedented opportunities for personalized instruction, data driven decision making, and improved learning outcomes. However, the adoption of these technologies is accompanied by significant challenges that must be addressed to realize their full potential. As Alkadi (2023) observes, rapid advances in AI and big data have reshaped various aspects of society, including education, by enabling institutions to process vast amounts of information and generate actionable insights. The widespread use of digital tools, platforms, applications, and online communication has produced enormous volumes of data, referred to as “big data,” distributed across diverse locations. Big data analytics involves collecting, examining, and interpreting large datasets to extract meaningful patterns and actionable knowledge. Techniques such as statistical analysis, data mining, data visualization, text analytics, social network analysis, signal processing, and machine learning are commonly employed to make sense of these data streams (Alkadi, 2023). Daily, digital systems generate approximately 2.5 quintillion bytes of new data, which, when properly harnessed, can serve as a powerful tool for improving educational outcomes. AI enables institutions to transform this passive resource into a dynamic driver of innovation and efficiency. Notwithstanding these benefits, significant challenges remain in applying AI and big data effectively within educational settings. Schools must prepare students for a technology driven society, ensuring that they acquire skills that complement automation, such as creativity, critical thinking, and emotional intelligence. Many institutions, however, fall short in equipping students with these essential competencies, creating a gap between technological potential and practical educational outcomes. Key challenges include:

Privacy Concerns: Privacy is a key concern when it comes to using AI tools in education. Privacy issues arise mostly when individuals reveal an excessive quantity of personal

information on internet platforms." Although current regulations and standards exist to safeguard sensitive personal data, transgressions by AI-based tech businesses in terms of data access and security raise people's privacy worries to solve issues, AI relies largely on algorithms, which are fed by personal data. "These algorithms do not arise in a vacuum; rather, they form and are changed by ever-evolving cultural, social, institutional, and political forces and structures. Fitness trackers, for example, generate information about persons that did not previously exist but might now be deemed personal information. However, this poses significant regulatory concerns in the context of "trustworthy AI," including data privacy and security, as well as possibly improper data, and uses leading to prejudices against people or groups

Lack of Emotional Bonds: Another point to consider is the significance of social and emotional bonds, as well as the very human experience of education. Simply said, artificial intelligence will not replace teachers. Bias is also cited as a disadvantage of AI experts. Machine-generated scores will be based on the outcomes of thousands of tests. However, as stated in this topic brief, test scores may indicate a lack of opportunity rather than a lack of competence. These distinctions will be impossible for machine scoring to make. Despite the great benefits that AI may provide to enhance teaching and learning through task automation, the development of AI applications in education introduces significant ethical considerations and challenges. For example, in times of budget constraints, administrators may be tempted to substitute instruction with lucrative auto-mated AI solutions. Faculty, teaching assistants, student counselors, and administrative personnel may be concerned that intelligent tutors, expert systems, and chatbots may replace them. AI can increase the capabilities of learning analytics, but such systems need massive volumes of data, including sensitive information about students and professors, raising severe privacy and data protection concerns.

Disruptive Technology: While this research has shown that AI has a wide range of potential applications, it may also be a disruptive technology that exacerbates current disparities and divisions since the marginalized and underprivileged population is more likely to be excluded from AI-powered education. As a result, there is a new type of digital divide: one in the use of data-based information to support wise decision-making. The most difficult aspect of adopting AI in school instruction is financial planning and strategy. The majority of the time, budget forecasting becomes quite difficult. For example, if all schools can have a robot helper, the potential power consumption will increase. Then governments would be required to fund a substantial budget for recovering costs. In addition, electricity is not a renewable resource, which is another unfavorable aspect of this issue. Understanding the available AI-based learning tools and how they might aid students is crucial to overcoming this obstacle.

Technology Addiction: In the past, going to school required kids to put away their smartphones and tablets and open their old textbooks. The use of technology in every class has made it impossible for kids to imagine what their lives will be like in the future without it. Because of it, society will have a large number of individuals who are addicted to technology yet lack social skills after a few decades. The reason for this is that AI can encourage techno-logical addiction

Promoting Bias: The ethical issues and threats provided by AI systems seem to contradict marketing efforts that portray algorithms to the public as objective and value-neutral instruments. Algorithms, in essence, mirror the ideals of their creators who occupy positions of authority. When humans construct algorithms, they also produce a collection of data that represents society's historical and systemic prejudices, which eventually become algorithmic biases. Even though prejudice is built in the algorithmic model with no conscious goal, we may detect a variety of gender and racial biases in various AI-based platforms

Less Flexibility: No matter how analytical AI robots are, they cannot grow a student's mind as flexibly as a teacher can. Educators may give a variety of problem-solving strategies, while AI lacks different

teaching strategies. AI likewise functions on the idea of "trash in, garbage out." Although it can identify faults, it cannot remedy them. If a person makes a mistake when inputting data, AI still does the analysis. However, the final result will indicate that mistakes exist. Therefore, time is wasted and the procedure must be redone

Despite the growing integration of Artificial Intelligence (AI) in education globally, there remains a significant gap in research on its practical application and impact on secondary school teaching and learning in Enugu State. While previous studies have largely focused on AI adoption in higher education or in technologically advanced settings, limited empirical evidence exists regarding its effectiveness in enhancing learning outcomes, student engagement, and teacher efficiency at the secondary school level in Nigeria. Furthermore, existing literature often emphasizes the potential benefits of AI without critically examining the challenges, ethical concerns, and infrastructural limitations that may hinder its successful implementation in local school contexts. This study therefore seeks to address these gaps by investigating not only the extent to which AI promotes effective teaching and learning but also the challenges and constraints faced by teachers and students in Enugu State secondary schools. By doing so, it aims to provide context-specific insights that can inform policy, teacher training, and technology integration strategies in Nigerian secondary education.

Statement of the Problem

The use of Artificial Intelligence (AI) in education has the potential to transform teaching and learning by providing personalized instruction, automating repetitive tasks, and enhancing students' engagement and academic outcomes. Ideally, secondary school students should have access to innovative AI-driven tools that support collaborative learning, interactive content, immediate feedback, and skill development, allowing teachers to focus on guiding critical thinking and creativity. In reality, secondary schools in Enugu State still rely heavily on traditional teaching methods, with limited integration of AI technologies. Many students lack opportunities to engage with intelligent learning systems, and teachers often do not have the training or resources to implement AI-based instructional strategies effectively. This gap has contributed to suboptimal student performance in internal and external examinations, as well as limited preparedness for a technology-driven society. Therefore, this study seeks to evaluate the impact of AI on promoting effective teaching and learning among secondary school students in Enugu State, investigating both its benefits and the challenges that hinder its full implementation. The research aims to provide insights on how AI can enhance teaching quality, improve student learning outcomes, and bridge the gap between current classroom practices and the ideal technology-driven educational environment.

Research Questions

The following research questions guided the study

1. What are the contributions of artificial intelligent in promoting effective teaching and learning in secondary schools in Enugu State?
2. What are the problems faced by secondary school student in Enugu State while using artificial intelligent during classroom instruction?

Research Hypothesis

The null hypothesis below guided the study.

H₀₁: There is no significant difference in the mean rating scores of Principals and Teachers on the contributions of artificial intelligent in promoting effective teaching and learning in secondary schools in Enugu State.

Methods

The study adopted a survey research design, which involves studying a group of people or items by collecting and analyzing data from a representative subset of the population. The area of the study was Enugu State, which is divided into six educational zones: Agbani, Awgu, Enugu, Nsukka, Obollo Afor, and Udi. The population comprised 8,122 secondary school teachers and principals from all 292 public secondary schools in the state. A sample of 570 respondents, including 245 male teachers, 296 female teachers, and 29 principals, was selected using a stratified random sampling technique, representing 10% of the total population. Data were collected using a structured questionnaire developed by the researchers, consisting of 30 items. The instrument was face-validated by three experts, two in Computer Science Education and one in Measurement and Evaluation, all from Enugu State University of Science and Technology (ESUT). For analysis, the mean responses of the respondents were used to answer the research questions, while the null hypothesis was tested using the t-test at a 0.05 level of significance.

Results

Research Question One: what are the impact of AI in promoting effective teaching and learning among secondary school students in Enugu State?

Table 1: showing the mean response of teachers and principals with the respect to the impact of AI in improving teaching and learning in Enugu State.

S/N	ITEMS	Principals				Teachers			
		N	X	SD	Dec	N	X	SD	Dec
1	Encourage personalized learning among the students	29	2.66	1.14	GE	812	2.64	1.14	GE
2	Facilitate consultation and administrative efficiency	29	2.74	1.16	GE	812	2.70	1.16	GE
3	Implore parent-based accessibility in school affairs.	29	2.54	1.13	GE	812	2.77	1.07	GE
4	Promote effective conduct of school continuous assessment	29	2.99	1.01	GE	812	2.60	1.08	GE
5	Provide pastoral adaptive learning platform for the students.	29	2.61	1.19	GE	812	2.51	1.16	GE
6	Promote automated grading system for the school.	29	2.44	1.03	LE	812	2.64	1.04	GE
7	Encourage virtual teaching assistant	29	2.55	1.16	GE	812	2.82	1.03	GE
8	Ensure speech recognition and natural language processing.	29	2.13	1.17	LE	812	2.54	1.14	GE
9	Assist the school with discipline strategies and activities where parent involvement is required	29	2.68	1.14	GE	812	2.50	1.16	GE
10	Encourage parents and teachers behavioral analytics of their children	29	2.58	1.16	GE	812	2.03	1.17	LE
			2.86	1.04			2.82	1.16	GE

Data on table 1 above shows the grand mean score of Principals and Teachers in Enugu State with respect to the impact of AI in promoting effective teaching and learning in secondary schools as 2.86 and 2.82 respectively. Further analysis of the item revealed that Principals did not agree on items 6 and 8 which say the mean scores fell below the acceptable point of 2.50 and above, while the teachers did not agree on 9 and 10 as their mean scores are below the acceptable point. The implication of the above findings is that to a high extent, AI improves quality teaching and learning in the secondary school system in Enugu State as opined by the respondents.

Research Question 2: what are the problems faced by secondary school students in Enugu State while using AI during teaching and learning?

Table 2: showing the mean response of principals and teachers with respect to the problems students are facing while using AI during teaching and learning among secondary school students in Enugu State.

			Principals			Teachers			
S/N	ITEMS	N	X	SD	Dec	N	X	SD	Dec
11	Encourage dependency on technology	29	2.66	1.14	GE	812	2.64	1.14	GE
12	Limit students privacy	29	2.74	1.16	GE	812	2.70	1.16	GE
13	Lack of human interaction	29	2.54	1.13	GE	812	2.77	1.07	GE
14	High risk of cheating	29	2.99	1.01	GE	812	2.60	1.08	GE
15	Less flexibility.	29	2.61	1.19	GE	812	2.51	1.16	GE
16	Promotion of bias	29	2.44	1.03	LE	812	2.64	1.04	GE
17	Encourage disruptive technology	29	2.55	1.16	GE	812	2.82	1.03	GE
18	Lack of emotional bond	29	2.13	1.17	LE	812	2.54	1.14	GE
			2.58	1.02			2.65	1.13	GE

Data on table 2 above shows the grand mean score of Principals and Teachers in Enugu State with respect to the impact of AI in promoting effective teaching and learning in secondary schools as 2.58 and 2.65 respectively of the respondents. Further analysis of the item revealed that Principals did not agree on items 16 and 18 which the mean scores fell below the acceptable point of 2.50 and above, while the teachers agreed on all the items as their mean scores are above the acceptable point. The implication of the above findings is that to a high extent, AI utilization in teaching and learning has some limitations it poses to the students as opined by the respondents.

Hypothesis I: There is no significant difference in the mean rating scores of Principals and Teachers in Enugu State on the impact of AI in promoting effective teaching and learning among secondary school students in Enugu State.

Respondent	N	X	SD	df	t-cal	t-crit	D
Principals	29	2.86	1.04				Not
Teachers	812	2.82	1.16	568	-1.62	±1.96	rejected

Table 3 shows the result of data analysis in hypothesis 1. The value of t-calculate was -1.62 at .05 level of significant difference and 568 degrees of freedom while the critical value was ±1.96.

Since the calculated value is less than the critical value the null hypothesis tested was not rejected. The implication of the above findings is that there is no significant difference in the mean rating scores of principals and teachers in Enugu State on the impact of AI in promoting effective teaching and learning among secondary school students in Enugu State.

Discussion

The findings of the study revealed that Artificial Intelligence (AI) greatly promotes effective teaching and learning among secondary school students in Enugu State, as reported by the respondents. The findings are in consonance with the study of Agbo (2024), who posited that AI has rapidly influenced all aspects of human life, including education, by providing tools and techniques that enhance collaboration, engagement, and learning efficiency. The findings are also supported by Idowu (2021), who observed that AI systems can monitor asynchronous discussion groups using techniques like machine learning and text processing, allowing teachers to track student discussions, provide feedback, and encourage active participation. Additionally, Eze (2023) noted that integrating AI educational technology enables instructors to reduce time spent on repetitive tasks, engage more meaningfully with students, and foster stronger teacher-student relationships, thereby improving learning outcomes. These findings indicate that AI facilitates collaborative learning, personalized instruction, and flexible learning opportunities, enhancing overall teaching and learning effectiveness.

The findings of the study revealed that Artificial Intelligence also poses challenges to students when used to promote effective teaching and learning. The findings align with Alkadi (2023), who observed that privacy is a significant concern when employing AI tools in education, as AI systems rely on personal data to optimize algorithms, raising potential risks of data misuse. The findings are also consistent with Onah (2022), who emphasized that AI cannot replace the social, emotional, and human aspects of education, which remain essential for effective learning. Moreover, bias in AI algorithms was identified as a challenge, as automated assessments may fail to consider socio-economic or contextual factors that affect student performance. These findings highlight that, despite its benefits, AI implementation in education must be carefully managed to address ethical, social, and technical challenges, ensuring that its application enhances rather than undermines student learning.

Educational Implications of the Study

The findings of the study revealed that Artificial Intelligence (AI) can significantly enhance teaching and learning by promoting personalized instruction, improving engagement, and supporting administrative tasks. Schools should integrate AI tools while ensuring ethical use, data privacy, and fairness. Teacher training on AI applications and digital literacy is essential, and curricula should incorporate AI awareness and digital skills. Equitable access to AI technologies must be ensured to prevent widening the digital divide, thereby maximizing the educational benefits of AI for all students.

Conclusion

Artificial Intelligence (AI) is a transformative technological force that is reshaping industries worldwide, including education. While AI cannot completely replace human teaching, it offers significant opportunities to enhance learning experiences, support instructional activities, and reduce the burden of routine tasks for educators. Its applications can improve personalized learning, foster problem solving, and expand access to educational resources. However, the effective integration of AI requires an understanding of its limitations, ethical considerations, and potential risks. When used thoughtfully, AI can complement traditional teaching methods, empowering both teachers and students to achieve better educational outcomes and adapt to the evolving demands of the digital age.

Recommendations

The following recommendations were made based on the findings of the study.

1. Government should enforce the utilization of Artificial Intelligent in every Public Secondary School in Enugu State to promote effective teaching and learning.
2. School Administrators should embark on sensitization programme to educate both the teachers, parents and the students on the need to utilize AI during classroom instruction for quality Education.

REFERENCES

- Agbo, I. C. (2024). The role of teachers and AI in education. In E. Ezike & C. C. Agbo (Eds.), *Perspectives on AI in education* (pp. 134–144). Meks Link Publisher.
- Agbo, C. (2024). *Artificial intelligence and education in Nigeria: Opportunities and challenges*. Enugu: EduTech Press.
- Alkadi, B. H. (2023). Evolution and revolution in artificial intelligence in education. *Journal of Educational Technology*, 34(2), 400–411. Heinemann Educational Books Nigeria Limited.
- Eze, K. (2023). Towards inclusive education in the age of artificial intelligence: Perspectives on rethinking and reforming education. *Journal of Educational Perspectives*.
- Ezeobi, J. C. (2022). *Qualitative research methods in the social sciences*. Ankara: Seckin Publication.
- Idowu, U. (2021). A proposal model of developing intelligent tutoring systems based on mastery learning. Paper presented at the Third International Conference on E-Learning in Education (pp. 304–311). Retrieved from <http://paper.researchhib.com/view/paper/16022>
- Ike, U. T. (2022). *Qualitative research in nursing education* (6th ed.). Enugu: Tones and Tone Publishers.
- Ikedi, U. C. (2023). Artificial intelligence and the academy's loss of purpose. *Online Learning*, 23(3). Chuka's Publishers.
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15–25. <https://doi.org/10.1016/j.bushor.2018.08.004>
- Nilsson, N. J. (2010). *The quest for artificial intelligence: A history of ideas and achievements*. Cambridge, UK: Cambridge University Press.
- Russell, S., & Norvig, P. (2020). *Artificial intelligence: A modern approach* (4th ed.). Harlow: Pearson Education Limited.