ASSESSMENT OF IMPACTS OF ARTIFICIAL INTELLIGENCE (AI) ON ACADEMIC PERFORMANCE OF STUDENTS OF PRINCE ABUBAKAR AUDU UNIVERSITY, ANYIGBA

Zacchaeus, Ozovehe Emmanuel[1]
zacchaeusemmanuel@gmail.com

Joseph O. Wogu
Department of Mass Communication
University of Nigeria, Nsukka
Joseph.wogu@unn.edu.ng

Anum, Victoria, PhD[1]
vikyanum@gmail.com
[1]Department of Mass Communication
Prince Abubakar Audu University, Anyigba

Abstract

The purpose of this study is to ascertain the academic performance of the students of Prince Abubakar Audu University with regards to the use of Artificial Intelligence (AI). Understanding AI's effects on student learning outcomes is becoming increasingly important as these technologies continue to penetrate society in many domains, including education. The survey approach was used in the study, and a questionnaire was used to collect data. The Diffusion of Innovations theory and the Technology Acceptance Model (TAM) are the foundation of this work. The results show that AI has a variety of effects on student performance, including increased efficiency and individualized learning. The study also looks at how pedagogical approaches and educational policy may be altered in order to maximize AI's advantages while avoiding its drawbacks. All things considered, this study adds to the larger conversation about the use of AI in education and helps shape plans for improving learning outcomes for students in the digital age.

Keywords: Artificial Intelligence, technology, innovations, education

Introduction

Over the past ten years, there have been significant changes to the educational landscape. The focus now is on integrating technology into today's curricula rather than on traditional teaching methods. Developing 21st-century skills through the use of innovative and creative technology is a major focus. Learning requires student participation, which is crucial (Khazanchi et al., 2022).

According to Naser (2008), traditional education is incapable of accommodating varied learning styles and degrees of preparation. This method identifies a sizable portion of kids who are under the care of a single teacher who is unable to meet their individual needs. Consequently, several students could feel dissatisfied and unable to meet their academic goals. Large class sizes in traditional education eliminate individualized instruction, which is available at Prince Abubakar Audu University, Anyigba, because it is not feasible for teachers to create customized study schedules that meet the needs of every student in the class.

Additionally, conventional education employs fewer instructional philosophies. Discussion forums, movies, and images aren't constantly

available. This characteristic may hinder learning and make it difficult to study well. Benteux & Chichekian (2022).

People rely more on apps and software in many areas, including education, as computers have grown more commonplace and information technology has progressed. Education establishments have been utilizing Artificial Intelligence (AI) technology, specifically machine learning, for the past few decades. Intelligent tutoring systems (ITS) are computer-based learning programs that make an effort to draw inferences about a student's comprehension of a subject and pinpoint his areas of strength and weakness in order to dynamically modify the learning process (Alkhatlan & Kalita, 2018). In addition to teaching methodologies, ITS is sometimes referred to as autonomous databases, or knowledge bases, for educational information.

ITS simulates the student dynamically across a range of problems or situations. The learner is assessed using the expert model, which provides a model of expert performance. The four essential components of an intelligent tutoring system are an interface, pedagogical knowledge, a student model, and an expert model. The learner state evaluation may have an impact on the system's pedagogical decisions about tutorial methodology, case selection, and curriculum sequencing. Albatish, Mosa, and Abu-Naser (2018)

According to Dai et al. (2020), Many people now believe that artificial intelligence (AI) will play a key role in the fourth industrial revolution and could perhaps ignite a fourth revolution in education. Though AI education has begun to appear in curricula, it should be noted that, similar to how television and computers were initially viewed as revolutionary advances in education, these technologies have now been demonstrated to enhance information access without materially changing fundamental teaching strategies. Educators must, however, evaluate AI's current skills and pinpoint viable directions for learning optimization. Examining how AI affects students' academic performance in Nigerian tertiary institutions makes sense given the increased interest.

There is growing acceptance of the strategic benefit that AI may bring to education. Loeckx (2016) asserts that artificial intelligence (AI) has the potential to be a helpful teaching tool that gives students interesting learning opportunities while relieving teachers of some of their workload. AI applications in education have a lot of potential, especially when paired with modern educational innovations like personalized learning and the digitization of course materials.

For instance, in order to make up for the teacher shortage, the Intelligent Tutoring System (ITS) has been utilized to methodically harness the modeling capability of AI approaches to construct reactive and adaptive lessons for the production of tailored learning environments (Boulay, 2016).

Seldon and Abidoye (2018) identify four main ways that ITSs provide personalized learning experiences: by using interfaces for human-computer communication, monitoring student input, assigning appropriate assignments, providing constructive critique, and so on. As more ITSs are created for a greater range of topics and themes, it is anticipated that the role of instructors will change; consequently, education may need to be reconsidered. Concerns about AI making their jobs harder are common among educators. Researchers and educators are actively engaged in a debate on topics such as the nature of learning and applications of artificial intelligence. Researchers questioned if, given the rate at which automation is replacing many other vocations, advances in AI might pose a threat to or potentially replace the role of teachers. The necessity for teachers' professional roles to change as AI develops is becoming increasingly apparent, and this will lead to the emergence of new organizational structures. Students' perceptions regarding these changes were another emerging difficulty (Flogie & Aberˇsek, 2015).

Even while many students can use AI as digital citizens to improve learning results, many academics are concerned that some students may fail to employ acceptable AI strategies for a given learning setting, which would result in unfavorable attitudes towards learning.

Statement of the Problem

Artificial intelligence (AI) technology integration is still developing, and as a result, there is a lot of attention being paid to how it will affect other facets of society, including

education. At Prince Abubakar Audu University in Anyigba, artificial intelligence is slowly influencing the academic environment. The university is on the cusp of a technological revolution. The impact of AI on university students' academic achievement, however, is yet not well understood.

By carefully examining the effects of AI on the academic achievement of students enrolled at Prince Abubakar Audu University, Anyigba, this study seeks to close this gap. In particular, the study aims to investigate the effects of using AI tools on grades, learning outcomes, and student engagement. These tools include intelligent tutoring systems, automated grading systems, and educational chatbots.

Objectives of the Study

The study sought to:

1. Determine AI technologies that are currently being utilized by students of Prince Abubakar Audu University, Anyigba.
2. Ascertain the perceptions of students of Prince Abubakar Audu University towards the use of AI in education.
3. To find out the extent to which AI affect students' academic achievements in Prince Abubakar Audu University, Anyigba.

Review of Related Literature

Historical Overview of Artificial Intelligence (AI)

At the Dartmouth Conference in 1956, John McCarthy, Marvin Minsky, Allen Newell, and Herbert Simon used the term artificial intelligence (AI) for the first time in the middle of the 20th century (Russell & Norvig, 2020). However, the concept of sentient robots predates their formal unveiling. The notion of artificial intelligence (AI) has its roots in the mythology and folklore of ancient societies, when mechanical beings with human-like intellect were often depicted, such as Talos, the Greek mythological metal robot. René Descartes, a philosopher, laid the foundation for the idea of artificial minds in the 17th century by proposing the idea of mechanical thinking and arguing that non-human animals may be viewed as automata (Descartes, 1641/2008). Artificial Intelligence (AI) has advanced significantly in the 20th century. Alan Turing proposed the Turing Test in 1950 as one of the early innovations. The test's goal was to determine whether a machine could behave intelligently enough to pass for a person (Turing, 1950). Known as the "golden age" of artificial intelligence, symbolic AI advanced rapidly throughout the 1950s–1970s. Researchers concentrated on creating systems that could reason and solve problems using symbolic representations and rules (Nilsson, 2010). However, the "AI winter" seasons of the late 1970s and early 1980s presented serious obstacles to AI, as funding and interest declined as a result of exaggerated expectations and unfulfilled promises of advances (Luger & Stubblefield, 2004).

The development of machine learning, neural networks, and computing power is responsible for the artificial intelligence boom in the late 20th century. Modern AI applications were made possible by innovations like the back propagation technique for neural network training (Rumelhart, Hinton, & Williams, 1986) and the creation of expert systems, which rekindled interest.

Artificial intelligence (AI) is now present in many facets of life, from recommendation engines and virtual assistants to self-driving cars and algorithms for medical diagnosis. Researchers are tackling ethical, social, and technical issues as AI develops, which is influencing the direction this exciting science may go in the future.

Applications of Artificial Intelligence (AI) in Various Fields

Artificial Intelligence (AI) has revolutionized industries and increased productivity, efficiency, and innovation. It has found widespread applications in a variety of fields. AI-powered systems are used in healthcare to diagnose diseases, prescribe treatments, and analyze medical imaging. These applications help physicians make better decisions and enhance patient outcomes (Esteva et al., 2017; Rajkomar et al., 2018). Artificial intelligence (AI) algorithms are employed in the areas of fraud detection, risk assessment, algorithmic trading, and personalized financial advice in order to assist financial companies in minimizing risk and maximizing investment strategies (De Luca & Terzi, 2020; Li,

2019).Artificial Intelligence (AI) is a key player in the transportation industry, helping to develop autonomous cars, traffic control systems, and predictive maintenance programs that improve urban mobility's sustainability, efficiency, and safety (Alahi et al., 2016; Sallab et al., 2017). Personalized shopping experiences, inventory management, and marketing tactics are made possible by AI-driven technologies in retail, which power recommendation engines, demand forecasting models, and supply chain optimization tools (Deng et al., 2019; Verhoef et al., 2020).

AI is being used in education to enable personalized learning experiences and improve student engagement and performance. Examples of these applications include intelligent tutoring systems, adaptive learning platforms, automated grading, and plagiarism detection programs (VanLehn et al., 2007; Al-Azawi et al., 2018). To strengthen networks and systems against cyberattacks and data breaches, artificial intelligence (AI) algorithms are used in cybersecurity for threat identification, anomaly detection, and behavior analysis (Deka et al., 2019; Swaminathan et al., 2020).

Additionally, AI is being used more and more in agriculture to support precision farming, yield prediction, pest identification, and crop monitoring. These applications help farmers maximize resource use and raise crop yields in a sustainable manner (Gebremedhin et al., 2020; Senthilnath et al., 2020). All things considered, AI's adaptability and revolutionary potential are propelling innovation and changing sectors all over the world, paving the way for previously unimaginable opportunities and breakthroughs in the future.

Artificial Intelligence (AI) in Education

Artificial Intelligence (AI) is fast becoming a useful tool to education by offering innovative solutions to many issues and enhancing students' performance. Artificial Intelligence (AI) technologies have a plethora of applications, including personalized learning platforms, automated grading systems, virtual teaching assistants, and intelligent tutoring systems.

1. Intelligent Tutoring Systems (ITS)

Intelligent Tutoring Systems (ITS) are AI-powered platforms that provide students individualized and flexible learning opportunities. According to VanLehn et al. (2007), these systems use machine learning algorithms to evaluate student performance data, pinpoint areas of strength and weakness, and modify the curriculum as necessary. By offering individualized feedback and guidance, ITS can significantly improve student engagement and academic outcomes across diverse subjects and grade levels.

2. Personalized Learning Platforms

Personalized learning platforms driven by artificial intelligence (AI) employ adaptive algorithms to tailor learning paths and materials according to individual student preferences, skills, and learning styles. According to Al-Azawi et al. (2018), these systems use predictive modeling and data analytics to evaluate student progress, suggest relevant readings, and enable self-paced learning. Personalized learning platforms foster greater comprehension of the subject matter, autonomy, and mastery by meeting the unique needs of each learner.

3. Automated Grading Systems

Automatic grading systems use machine learning and natural language processing (NLP) to effectively assess quizzes, examinations, and assignments from students. These technologies lessen the workload for teachers and improve the scalability of assessment procedures by analyzing written responses, evaluating comprehension, and giving students immediate feedback (Dikli, 2003). Additionally, teachers can concentrate more on lesson plans and intervention techniques to enhance students' learning thanks to automated grading systems.

4. Virtual Teaching Assistants

Chatbots, often referred to as conversational agents or virtual teaching assistants, use artificial intelligence (AI) algorithms to communicate with students, respond to inquiries, and offer academic support in real-time. These intelligent agents provide individualized support and advice outside of typical classroom settings by being integrated into websites, mobile applications, or learning management systems (Ally, 2008). By augmenting human education with AI-driven support, virtual teaching assistants improve accessibility, encourage active engagement,

and cultivate collaborative learning environments.

Even though AI has a lot of potential to change education, there are a number of practical issues and moral dilemmas with its application. To guarantee the ethical application of AI in educational contexts, issues with data privacy, algorithmic bias, and equity of access need to be addressed (Baker, 2020). Furthermore, in order to create ethical frameworks, build evidence-based practices, and encourage students to become digitally literate, educators, technologists, legislators, and other stakeholders must work together effectively to integrate AI technology (Williamson, 2020).

Above all, AI has the potential to fundamentally alter education by fostering creativity in instruction, enhancing individualized learning, and improving evaluation practices. By using AI, educators can create inclusive, adaptable, and engaging learning environments that help students realize their full potential.

Nigerian Students' Adoption and Perception of AI

Around the world, including in Nigeria, artificial intelligence (AI) is becoming more and more acknowledged as a game-changer in education. It is essential to comprehend how Nigerian students use and see artificial intelligence (AI) in order to properly incorporate AI into teaching methods and handle any potential obstacles or possibilities. While there is a dearth of research directly examining the adoption of AI among Nigerian students, more general studies on digital literacy and technology adoption offer important insights. Due to factors like rising internet penetration, smartphone usage, and government programs to support digital literacy, Nigeria has seen notable gains in the adoption of technology (Bankole et al., 2018).

However, there are still regional differences in access to technology, and these differences can have an impact on students' adoption of AI tools and platforms due to differences in infrastructural and socioeconomic conditions (Okonkwo & Onyenechere, 2020). Furthermore, the adoption of AI in Nigerian educational institutions is still in its infancy, with little opportunity for instructors and students to receive training and understanding (Eze et al., 2020). There is little but growing research on how Nigerian pupils see artificial intelligence. Nigerian cultural, societal, and economic issues may have an impact on how Nigerian students view AI. The promise of AI to improve learning outcomes, give students access to educational resources, and get them ready for jobs in the digital economy may be the reason for positive perceptions of the technology (Ogunlana et al., 2020).

However, Nigerian students may also harbor unfavorable opinions or worries about AI, such as worries about employment displacement, privacy threats, and ethical ramifications (Bankole et al., 2018). To allay these worries, extensive education and awareness initiatives are needed to advance a fair comprehension of AI's advantages and disadvantages. The adoption and perception of AI among Nigerian students are characterized by a number of potential and problems. According to Okonkwo and Onyenechere (2020), obstacles include restricted access to technology, a lack of digital skills, inadequate infrastructure, and moral reservations about the effects of AI on society. Furthermore, students might not be able to fully take advantage of AI's potential for learning and creativity if there aren't enough specialized educational resources and training programs available (Eze et al., 2020).

However, there are also chances to deal with these issues and encourage favorable opinions about AI among students in Nigeria. The digital divide can be closed and an innovative and AI-literate culture can be fostered through programs including government-led digital literacy, educational technology infrastructure investments, and collaborations between industry, government, and academia (Ogunlana et al., 2020).

In summary, there is a paucity of study on the adoption and perception of AI among Nigerian students, but newer studies point to both opportunities and difficulties. Encouraging technological accessibility, the development of digital skills, and AI education programs are critical to enabling Nigerian students to accept AI as a tool for learning, creativity, and socioeconomic progress.

Review of Empirical Studies

An in-depth investigation on AI-powered tutoring systems that provide personalized guidance and assessments based on each

student's needs was conducted by Rizvi (2023). In particular, the study aims to evaluate the possibilities of AI-driven tutoring systems that can adjust and offer individualized advice based on the requirements of each student. The researcher argues that with the rapid advancement of Artificial Intelligence (AI) technology, there is a growing interest in utilizing these capabilities for educational reasons.

Because AI-powered tutoring systems provide personalized instruction based on each student's strengths, weaknesses, and preferred learning style, they have the potential to drastically alter the way students learn. The investigation examined several studies and research publications that examined the inception, applications, and effectiveness of such innovative solutions. This entails investigating technologies like natural language processing, machine learning, and data mining that enable these systems to adjust their interactions according to the demands of the students. After taking findings from the body of current literature into consideration, the research came to the conclusion that more work has to be done in the area of artificial intelligence adoption in education.

While Rizvi's study did not specifically identify the challenges and inadequacies associated with students' artificial intelligence adoption, this investigation seeks to assess the impact of AI on students' academic achievement, focusing on Prince Abubakar Audu University, Anyigba.

Nguyen et al. (2023) have carried out research on the moral standards for AI applications in education. Considering the increasing ethical hazards and worries about different aspects such as learner autonomy and personal data, the researchers seek to ascertain whether the development of Artificial Intelligence in Education (AIED) has the capacity to alter the educational environment and influence the roles of all parties involved. Additionally, the research looks at whether there is global consensus on ethical AIED by mapping and analyzing the current rules and norms of international organizations. By examining and synthesizing pertinent ethical policies and guidelines for AIED, the researchers used thematic analysis to conceptualize and establish a set of ethical principles that could be adopted by relevant educational stakeholders, including teachers, students, technology developers, policymakers, and institutional decision-makers. The aim of this research is to determine the impact of artificial intelligence on the academic performance of Prince Abubakar Audu University, Anyigba students. The researchers expected that their suggested set of moral guidelines would act as a foundation for educating and directing educational stakeholders in the creation and use of morally sound AIED and that it would also serve as a catalyst for the subsequent advancement of relevant impact studies in the area.

The use of artificial intelligence (AI) in education from 2010 to 2020 was examined by Zhai et al. 2020. In order to shed light on the applications of artificial intelligence (AI) in the field of education and explore potential avenues for future research as well as challenges facing the field, the study provided a content analysis of earlier studies. The researchers selected a total of 100 papers from the education and educational research category of the Social Sciences Citation Index database between 2010 and 2020, comprising 37 analytical and 63 empirical (or 74 investigative) studies. According to the content analysis, the research questions fall into three categories: integration layer (affection computing, role-playing, immersive learning), application layer (feedback, reasoning, and adaptive learning), and development layer (classification, matching, recommendation, and deep learning). The researchers suggested that additional study be done on the Internet of Things, swarm intelligence, deep learning, and neuroscience in addition to evaluating AI in education. Nonetheless, the researchers raised worries about the possible abuse of AI technology, the changing roles of teachers and students, and moral and societal issues. The findings give educators and AI engineers an overview of the field of artificial intelligence (AI) in education as well as a workable route for future cooperative study. This contributes to fortifying AI's theoretical underpinnings in education. It is important to emphasize that there aren't many genuine empirical research in this field, which is still relatively new, particularly in Nigeria. Therefore, by personally interacting with the students of Prince Abubakar Audu University, Anyigba, this study hopes to close the gap.

Theoretical Framework

The study was hinged on Technology Acceptance Model (TAM) and Diffusion of Innovations Theory.

Technology Acceptance Model (TAM)

Fred Davis developed the Technology Acceptance Model (TAM) in 1986. The concept was developed specifically to mimic how people would embrace new information systems or technology. Davis' TAM attempts to elucidate the overall factors of computer adoption in order to comprehend user behavior across a broad spectrum of end-user computing systems and user groups. The fundamental TAM model includes Perceived Utility (PU) and Perceived Ease of employ (PEU), which are the main determinants of users' behavioral intention to employ a technology under examination. The addition of social impact mechanisms in predicting how customers will use new technology has been a noteworthy and well-received addition to TAM (Venktatesh and Davis, 2000 as quoted by Rauniar, Rawski, Yang & Johnson, p. 9). This model is relevant to the study since TAM may be used to examine the variables impacting students' adoption and usage of AI-enabled learning technology. That is to say, the extent to which students accept and utilize AI tools is largely determined by their perception of the technology's value in education, particularly in providing personalized feedback and assistance. Similarly, how simple and easy AI technologies are regarded to be to use, and how easily they can be integrated into existing learning platforms, can also be a major factor.

Diffusion of Innovations Theory

The French sociologist Gabriel Tarde proposed the first S-shaped diffusion curve and adopter categories used in the current theory developed by Everett Rogers (Toews, 2003). The historical analysis of Tarde's work on the notion of diffusion of innovation began in 1943. The concepts of opinion leaders and opinion followers, as well as the ways in which the media shapes these two groups, were created by Katz (1957). When technical innovation is presented and adjusted to suit the requirements of adopters at all levels, the Diffusion of Innovation theory is widely recognized as a useful change model for directing the process. It also emphasizes how crucial peer networking and communication are to the adoption process. To put it briefly, the spread of innovation is the process by which people accept a new concept, service, method, ideology, and so forth. In his process diagram, Rogers made clear that while most individuals are receptive to new ideas, only a small percentage decide to put them into practice. These early innovators create a critical mass by trying to "spread the word," which raises the number of people who are receptive to it. The public adopts the new concept or product gradually until it reaches a saturation point. Rogers identified early adopters, innovators, early majority, late majority, and laggards as his five kinds of innovators. Non-adopters are occasionally added as a sixth group. This theory is particularly pertinent to the study since Prince Abubakar Audu University Anyigba students' decision to adopt an innovation (like artificial intelligence) may be influenced by a variety of factors, such as the innovation's perceived relative advantage, compatibility, and complexity. Perceived relative advantage in the context of AI in education could refer to the advantages and usefulness of AI technologies over conventional techniques. The degree to which AI technologies mesh effectively with current learning contexts is referred to as compatibility. One way to define complexity in AI tools is their perceived ease of use and comprehension.

Methodology

The survey approach was used in the study, and a questionnaire was used to collect data. According to information from the university's academic unit, 17, 250 undergraduate students at Prince Abubakar Audu University in Anyigba make up the study's population. The population's sample size of 318 was determined using the Taro Yamane formula. A multi-stage sampling procedure was employed to choose a sample of participants. Out of the university's eight faculties, two were purposefully chosen for the initial phase. Based on the presumption that faculty members will have a deeper understanding of communication concerns than others, there are faculties of social sciences and art and humanities.

In the subsequent phase, two departments were deliberately chosen. Considering that both departments deal with communication, they are the departments of theater arts and mass communication. In the third phase, the sample

units were reached in their different classes during the lecture blocks using the cluster sampling technique. The 318 copies of the data collection tool (questionnaire), which were completed with the assistance of skilled research assistants, were confirmed to be valid for analysis. The primary data was presented and analyzed using descriptive data analysis, and four senior academics from both departments verified the instrument's legitimacy using face and content validity.

Data Presentation

At the end of data collection, tables below show the distribution of the responses as they relate to objectives of the study.

Table 1. Responses on AI technologies that are currently being utilized by students of Prince Abubakar Audu University, Anyigba.

Responses	Frequency	Percentage
Chatbots and Virtual Learning Assistance	91	29
Personalized Learning System	51	16
Natural Language Processing Tool	30	10
Grammar and Writing Checker	82	26
Research and Citation Tool	58	19
Total	**312**	**100**

Source: Field Survey, 2024

The table above shows students' responses regarding Artificial Intelligence (AI) technologies currently being used amogst students of Prince Abubakar Audu University, Anyigba.

Table 2. Responses on perceptions of students of Prince Abubakar Audu University towards the use of AI in education**.**

Responses	Frequency	Percentage
Ease of use	**124**	**40**
Reliability/ trustworthiness	**86**	**28**
Induction of laziness	**10**	**3**
Versatility	**92**	**29**
Total	**312**	**100**

Source: Field Survey, 2024

The table above represents various perception held by students of Prince Abubakar Audu University about usage of Artificial Intelligence (AI) technologies.

Table 3. Responses on the extent to which AI affect students' academic achievements in Prince Abubakar Audu University, Anyigba.

Responses	Frequency	Percentage
Improved Cumulative Gross Point Average (CGPA)	**175**	**56**
Time conservation for deadlines	**66**	**21**
Engaging learning experience	**40**	**13**
Addictive Tendency	**31**	**10**
Total	**312**	**100**

Source: Field Survey, 2024

The table above depicts how Artificial Intelligence (AI) technologies have affected the academic performance of students of Prince Abubakar Audu University, Anyigba

Discussion of Findings

The first objective of the study is to determine the AI technologies that are currently being utilized by students of Prince Abubakar Audu University, Anyigba. Findings revealed that out of many AI technologies, the most prevalent ones amongst students of Prince Abubakar Audu University, Anyigba are Chatbots and Virtual Assistants, Personalized Learning Systems, Natural Language Processing Tools, Grammar Writing Checker and Research and Citation Tool. Table 1 specifically revealed that 91 respondents representing 29% of the sampled population utilize Chatbots and Virtual Assistants which is designed to provide information and help students with a range of tasks, such as scheduling, organizing, and research. Additionally, table 1 shows that 82 and 58 respondents, respectively, confirmed that they used Grammar and Writing Checker and Research and Citation Tool. These responses support Rizvi's (2023) investigative

research, which suggested that students are becoming more and more interested in using artificial intelligence (AI) technologies for educational purposes as these technologies advance at a rapid pace.

Moreso, the second objective of the study is aimed at ascertaining the perceptions of students of Prince Abubakar Audu University towards the use or adoption of Artificial Intelligence technologies in education. Findings from table 2 above shows that 124 respondents representing 40% of the sampled population perceived AI technologies as a veritable educational tool because of its ease of use. This particular insight is expressed in the widely used Technological Acceptance Model (TAM), which was first presented by Davis in 1986. Davis' TAM attempts to elucidate the overall factors of computer adoption in order to comprehend user behavior across a broad spectrum of end-user computing systems and user groups. The fundamental TAM model includes Perceived Utility (PU) and Perceived Ease of employ (PEU), which are the main determinants of users' behavioral intention to employ a technology under examination. But a key finding that highlighted the need for ethical regulation was the ten respondents' worries that AI technology would induce mental sloth, in contrast to the eighty-six respondents who saw it as a dependable and trustworthy teaching tool.

The third objective of the study is to find out the extent to which AI affect students' academic achievements in Prince Abubakar Audu University, Anyigba. Substantially, findings of the study have depicted that students witnessed good learning outcomes which manifested in improved Cumulative Gross Point Average (CGPA) as a result of adoption of Artificial Intelligence technologies in their studies. This increase in students' academic performance corroborated some of the findings from a study by Nguyen et al. (2023) on the ethical principles of artificial intelligence in education. The researchers' goal was to determine whether the development of AIED has the potential to change education in general and student education in particular. Even while students' academic performance improves, the survey also showed (table 3) that around 66 respondents said that using artificial intelligence in the classroom has significantly reduced the amount of time needed to complete activities and assignments.

As indicated by 31 respondents, or 10% of the studied population in table 3 above, the use of artificial intelligence appears to be very addictive, similar to many earlier technical advancements. In order to work in tandem with Everett Rogers' Diffusion of Innovation theory —which is widely acknowledged as a helpful change model for guiding technological innovation when it is presented and modified to satisfy the needs of adopters at all levels—the implications of this potential addiction highlight the need for greater awareness and a focus on media literacy.

Conclusion

It is incontrovertible that the emergence of Artificial Intelligence (AI) technologies have positive impacts on the academic performances of students of Prince Abubakar Audu University, Anyigba as aptly represented on the various tables above. The Advancement of Artificial Intelligence in Education (AIED) has caused sweeping changes in the traditional roles of educators and students as the latter are presented with many options that aid learning conveniently.

Recommendations

It is therefore recommended that:

1. There should be ethical guidelines in the use of Artificial Intelligence technologies amongst students especially those in Prince Abubakar Audu University, Anyigba in order to forestall possible mental laziness and dearth of critical thinking ability in academic environment.
2. School managements especially Prince Abubakar Audu University, Anyigba should establish or provide supporting facilities like internet connection, uninterrupted power supply and well equipped research laboratory to aid students' research efforts.
3. There should be more concerted and conscious effort at enlightenment on media literacy in order to forestall possible addictive tendencies in the use of Artificial Intelligence technologies

amongst students of Prince Abubakar Audu University, Anyigba.

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