

**ARTIFICIAL INTELLIGENCE TOOLS AND THEIR INFLUENCE ON
STUDENTS' ACADEMIC PERFORMANCE IN TERTIARY INSTITUTION****¹OGBEIDE-AKUGBE, M.; & ²ELAMAH A, N.**¹ & ²Department of Office Technology and Management
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Edo State, NigeriaE-mail: ¹akugbemercy282@gmail.com; & ²elamahabdulsalami@gmail.comTel: ¹08033503458; & ²07038028587**Abstract**

Artificial Intelligence (AI) has significantly transformed teaching and, learning, research and assessment in higher education. The rapid adoption of AI-powered tools such as ChatGPT, Google Gemini, Microsoft Copilot, Grammarly, QuillBot, and adaptive learning platforms has significantly influenced teaching and learning processes in tertiary institutions worldwide. This paper examined artificial intelligence tools and their influence on students' academic performance in tertiary institutions. The purpose was to discuss the concept of artificial intelligence, commonly used AI tools among students, the positive and negative influences of AI on academic performance, challenges associated with AI adoption in higher education, and strategies for promoting ethical and effective use of AI technologies. The paper adopted a descriptive review approach by synthesizing findings from recent empirical studies conducted across in Nigeria. Evidence from the reviewed literature indicates that AI tools improve students' academic performance by enhancing personalized learning, increasing leaning motivation, supporting academic writing, improving research efficiency, and providing immediate feedback. However, excessive dependence on AI may weaken critical thinking, reduce creativity, encourage academic dishonesty, and compromise the development of independent learning skills. The paper concluded that AI should complement rather than replace students' cognitive efforts. It suggested amongst others that tertiary institutions formulate AI usage policies, train lecturers and students on responsible AI practices, redesign assessment methods, and integrate AI literacy into the curriculum to maximize its educational benefits.

Keywords: Artificial Intelligence, AI Tools, Academic Performance, Students.**Introduction**

The emergence of Artificial Intelligence (AI) has transformed virtually every sector of society, including healthcare, banking, agriculture, manufacturing, communication, and education. In recent years, higher education has witnessed an unprecedented integration of AI technologies into teaching, learning, research, assessment, and administrative processes. The introduction of generative AI tools such as ChatGPT, Google Gemini, Microsoft Copilot, Grammarly, QuillBot, and numerous intelligent tutoring systems has fundamentally changed how students access knowledge and complete academic tasks.

Artificial Intelligence refers to the capability of computer systems to perform tasks that ordinarily require human intelligence, including reasoning, learning, problem-solving, language understanding decision-making, and pattern recognition, Zawacki-Richter et al. (2019) AI systems use machine learning algorithms, natural language processing, computer vision, and deep learning techniques to analyze data, generate responses, and support human activities. Within tertiary institutions, AI tools assist students in researching academic topics generating ideas, summarizing literature,

correcting grammar, solving mathematical problems, writing computer codes, and improving communication skills.

Globally, tertiary institutions are increasingly embracing AI-driven educational technologies because they offer personalized learning experiences that accommodate students with different learning abilities and academic backgrounds. AI powered platforms provide immediate feedback, recommend learning materials, identify students' learning weaknesses, and monitor academic progress (World Economic Forum 2023). Consequently, students are able to learn at their own pace while lecturers gain insights into learners' performance through intelligent analytics.

In Nigeria, the growing availability of smartphones, internet connectivity, and cloud-based AI applications has accelerated the adoption of AI tools among university, polytechnic and college of education students. Many students now use ChatGPT and similar applications for assignment preparation, research assistance, project writing, examination revision, programming support, and academic communication. These technologies have contributed to improved access to information and enhanced learning efficiency. Nevertheless, concerns have emerged regarding excessive dependence on AI-generated content, plagiarism, declining critical thinking skills, misinformation, and violations of academic integrity (UNESCO 2021)

According to Ogbebor (2025), academic performance remains a major indicator of educational success in tertiary institutions. It reflects the extent to which students' achieve established learning objectives through examinations, assignments, research projects, presentations, practical activities, and continuous assessments. Several factors influence academic performance, including study habits, learning environment, motivation, lecturer quality, technological resources, and students' cognitive abilities. The integration of AI introduces another important factor that deserves careful examination because its influence may be either beneficial or detrimental depending on how students utilize these technologies.

The increasing popularity of AI tools therefore presents both opportunities and challenges for higher education. While AI can improve learning outcomes, facilitate independent learning, and increase academic productivity, inappropriate use may undermine originality, creativity, and ethical scholarship. This paper therefore examines the Influence of Artificial Intelligence Tools on Students' Academic Performance in Tertiary Institutions by reviewing contemporary literature and offering recommendations for responsible AI adoption.

Statement of the Problem

The increasing availability and accessibility of Artificial Intelligence tools have transformed students learning experiences in tertiary institutions. AI applications are now routinely used for literature searches, essay writing, language editing, problem-solving, programming, data analysis, and examination preparation. Despite these benefits, many educators, remain concerned about the implications of excessive AI dependence on students' academic development.

Reports indicate that some students rely heavily on AI-generated responses without critically evaluating or understanding the information provided. Such practices may reduce analytical thinking, creativity, originality, and independent problem-solving skills that are expected from graduates of higher institutions. Furthermore, the misuse of AI has increased concerns about plagiarism, academic dishonesty, inaccurate information, and unethical assessment practices.

In many developing countries, including Nigeria, institutional policies regulating AI usage remain inadequate. Many lecturers lack sufficient knowledge of AI technologies,

while students often receive little guidance regarding ethical AI practices. Consequently, uncertainty exists regarding the overall influence of AI tools on students' academic performance. Although numerous international studies have investigated AI in education, relatively fewer empirical studies have focused specifically on tertiary institutions in developing countries where technological infrastructure, digital literacy, and educational policies differ considerably. This gap underscores the need to synthesize current evidence on the influence of AI tools on Students' Academic Performance and identify strategies that promote responsible AI integration within tertiary education.

Purpose of the Study

The main purpose of this paper was to examine artificial intelligence tools and its influence on students' academic performance in tertiary institutions in tertiary institutions. The specific purpose are to:

1. Explain the concept of Artificial Intelligence and AI tools in tertiary institution;
2. Identify commonly used AI tools among students in tertiary institutions;
3. Examine the positive and negative influence of AI tools on students' academic performance;
4. Identify challenges associated with AI adoption in tertiary institutions; and
5. determine strategies for promoting ethical and effective use of AI tools in tertiary institutions.

Research Questions

The paper addresses the following questions on Artificial Intelligence Tools and its Influence on Students' Academic Performance in Tertiary Institutions.

1. What is Artificial Intelligence and what are the AI tools are commonly used in tertiary institution?
2. How do AI tools positively influence of AI tools on students' academic performance?
3. What positive and negative effects do AI tools have on students' academic performance?
4. What challenges affect adoption of AI tools in tertiary institutions?
5. What strategies are needed for promoting ethical and effective use of AI tools in tertiary institutions?

Conceptual Literature Review

Artificial Intelligence

Artificial Intelligence (AI) refers to the ability of computer systems to perform tasks that typically require human intelligence, including learning, reasoning, problem-solving, decision-making, language understanding, and pattern recognition. AI integrates technologies such as machine learning, deep learning, natural language processing (NLP), robotics, and computer vision to simulate human cognitive processes.

According to Russell and Norvig (2021), Artificial Intelligence is the study and design of intelligent agents that perceive their environment and take actions to maximize the likelihood of achieving specified goals. Similarly, Kaplan and Haenlein (2020) described AI as a system's capability to correctly interpret external data, learn from such data, and use those learnings to achieve specific objectives through flexible adaptation.

In education, AI has transformed traditional teaching and learning by enabling personalized instruction, intelligent tutoring, automated assessment, virtual learning assistants, predictive analytics, and adaptive learning systems. AI technologies support

lecturers in curriculum delivery while assisting students with individualized learning experiences that enhance knowledge acquisition and academic achievement.

The rapid development of generative AI applications has further revolutionized higher education. Unlike traditional software that retrieves information, generative AI creates original text, images, computer codes, presentations and summaries in response to user prompts. Consequently, students can receive immediate explanations, personalized tutoring, and writing assistance, making AI an increasingly indispensable educational resource (UNESCO 2021).

Artificial Intelligence Tools Used by Students in Tertiary Institutions

Several AI-powered applications have become popular among students because they improve learning efficiency and academic productivity. Ngonso et al (2025) highlighted seven common AI tools used by students includes:

1. **ChatGPT**, developed by OpenAI, is one of the most widely used generative AI tools in tertiary institution. It assists students in generating ideas, explaining difficult concepts, summarizing articles, preparing assignments, solving programming problems, drafting research proposals, and improving academic writing. It also serves as a virtual tutor by providing instant responses to academic questions.
2. **Google Gemini** is an AI-powered assistant capable of generating text, solving mathematical problems, summarizing research materials, and supporting collaborative learning. Students use Gemini for brainstorming, project development, literature review, and language translation.
3. **Microsoft Copilot** integrates AI into Microsoft Word, Excel, PowerPoint, and other productivity applications. It assists students in drafting reports, creating presentations, analyzing datasets, and improving academic documents.
4. **Grammarly** is an AI-based writing assistant that checks grammar, punctuation, spelling, vocabulary, sentence structure, tone, and clarity. It enhances students' academic writing by improving readability and reducing grammatical errors.
5. **QuillBot** provides paraphrasing, summarization, grammar correction, citation generation, and plagiarism checking. Students use it to rewrite academic texts while maintaining their original meaning.
6. **Intelligent Tutoring Systems (ITS)** are AI-powered educational platforms that provide personalized instruction according to students' learning needs. These systems evaluate learners' progress and recommend suitable learning materials and exercises.
7. **Adaptive Learning Platforms** this is adaptive learning technologies continuously analyze students' performance and adjust instructional content to meet individual learning abilities. These platforms improve comprehension by allowing students to progress at their own pace.
8. **AI-Based Translation Tools** these are applications such as DeepL and Google Translate assist students in translating academic materials from one language to another, thereby supporting multilingual learning and access to global scholarly resources.

Academic Performance

Academic performance refers to the extent to which students successfully achieve educational goals established by their institutions. It is commonly measured through examination scores, grade point average (GPA), continuous assessment, project work, assignments, presentations, practical exercises, and classroom participation,

York et al. (2015) defined academic performance as the measurable level of educational achievement attained by students through formal evaluation processes. Similarly, Ali et al. (2013) explained that academic performance reflects the quality of learning outcomes resulting from students' intellectual abilities, motivation study habits, and learning environment.

Academic performance is influenced by numerous factors as enumerated by Ogbebor (2025) which includes: students' motivation; study habits; time management; teaching quality; learning resources; family background; digital literacy; technological infrastructure; and availability and effective utilization of artificial intelligence tools. When AI technologies are used responsibly, they can improve understanding, retention, and academic achievement. However, misuse may negatively affect learning outcomes and intellectual development.

Positive Influence of Artificial Intelligence Tools on Students' Academic Performance

Artificial Intelligence offers numerous educational benefits that contribute significantly to students' academic success. Below are some of the positive influence according to Kasneci et al. (2023):

1. **Personalized Learning.** AI systems adapt learning materials according to students' individual strengths, weaknesses, and learning pace. This personalized approach improves understanding and retention of knowledge.
2. **Immediate Feedback.** AI-powered learning systems, provide instant feedback on quizzes, assignments, and practice exercises. Immediate correction enables students to identify mistakes and improve their understanding.
3. **Improved Academic Writing.** Applications such as Grammarly and QuillBot help students produce clearer, more accurate, and professionally written assignments by correcting grammar, punctuation, sentence structure, and vocabulary.
4. **Enhanced Research Skills.** AI search tools simplify literature reviews by locating relevant journal articles, summarizing research findings, and organizing references, thereby saving time and improving research quality.
5. **Increased Learning Motivation.** Interactive AI learning environments make learning more engaging through simulations, virtual tutoring and personalized recommendations, increasing students' interest and motivation.
6. **Better Time Management.** AI automates routine academic tasks such as note summarization, scheduling, citation generation, and document formatting, allowing students to allocate more time to meaningful learning activities.
7. **Support for Students with Disabilities.** AI-powered speech recognition, screen readers, captioning tools, and text-to-speech applications improve educational access for students with visual, hearing, and learning disabilities, thereby promoting inclusive education.

Negative Influence of Artificial Intelligence Tools on Students' Academic Performance

Despite its benefits, AI also presents several educational challenges as asserted by Dwivedi et al. (2023):

1. **Overdependence on AI.** Students who excessively rely on AI-generate answers may fail to develop independent thinking, analytical reasoning, and problem-solving abilities.
2. **Academic Dishonesty.** The ease of generating essays, assignments and examination responses using AI has increased concerns regarding plagiarism, cheating, and violations of academic integrity.

3. ***Decline in Critical Thinking.*** When students accept AI-generated responses without verification, opportunities for critical analysis and independent reasoning are reduced.
4. ***Inaccurate Information.*** AI systems occasionally generate incorrect, outdated, or fabricated information. Students who fail to verify AI outputs risk using inaccurate academic content.
5. ***Reduced Creativity.*** Heavy dependence on AI-generated ideas may discourage originality, innovation, and creative thinking among students.
6. ***Privacy and Data Security Concerns.*** Many AI platforms collect user data, raising concerns about privacy, confidentiality and ethical handling of students' personal information.

Relationship between Artificial Intelligence Tools and Academic Performance

The relationship between AI tools and students' academic performance is generally positive when AI is used responsibly and ethically. AI enhances learning by providing personalized instruction, immediate feedback, improved writing assistance, efficient research support, and adaptive learning experiences. These benefits contribute to improved examination performance, higher GPA, increased learning motivation and better knowledge retention.

However, the relationship can become negative when students misuse AI by depending entirely on AI-generated content without engaging in independent learning. Responsible AI use therefore determines whether its influence on academic performance becomes beneficial or detrimental.

Theoretical Framework

This paper is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989). The model explains how users come to accept and use a new technology. According to TAM, two major factors determine whether individuals adopt a technology:

1. ***Perceived Usefulness (PU).*** The extent to which a person believes that using a technology will improve his or her performance.
2. ***Perceived Ease of Use (PEOU).*** The extent to which a person believes that using a technology will be free of effort.

Applying TAM model to tertiary education, students are more likely to adopt AI tools such as ChatGPT, Google Gemini, Microsoft Copilot, Grammarly, and QuillBot when they perceive these tools as useful for improving learning outcomes and easy to use. Frequent and effective use of AI technologies can enhance learning, research, assignment quality, and academic achievement. However, misuse or over dependence may negatively affect critical thinking, creativity, and independent learning. The Technology Acceptance Model is therefore relevant because it explains why students adopt AI tools and how such adoption influences their academic performance.

Empirical Review

Several empirical studies have examined the influence of Artificial Intelligence tools on students' academic performance.

Ogbebor (2025) investigated the influence of Artificial Intelligence tools on students' academic performance in selected tertiary institutions in Nigeria. The findings indicated that AI-assisted learning significantly improved students' research skills, assignment quality, digital literacy, and overall academic performance. The study recommended integrating AI literacy into tertiary institution curricula.

Ngonso et al. (2025) examined AI adoption among Nigerian university students and found that AI applications improved learning efficiency, information retrieval, and students' confidence in completing academic tasks. However, excessive reliance on AI reduced students' independent analytical abilities.

A study conducted at Nnamdi Azikiwe University revealed that students who used AI-powered educational technologies demonstrated higher levels of academic engagement and learning motivation than those who relied solely on conventional learning methods. The researchers emphasized that AI should be used as a complementary learning resource rather than a substitute or independent study.

Similarly, studies conducted in Nigerian universities have shown that AI-based writing assistants such as Grammarly improve students' grammar, coherence, and academic writing quality, especially during project writing and research report preparation.

Synthesis of the Reviewed Literature

The literature reviewed demonstrates that Artificial Intelligence has become an important educational innovation in tertiary institutions worldwide. Most researchers agree that AI tools improve personalized learning, facilitate academic research, enhance writing quality, provide immediate feedback, and increase students' learning motivation. The review also reveals that AI contributes positively to academic performance through adaptive learning systems, intelligent tutoring, automated assessment, and research support. Students' benefits from faster access to information, improved academic communication, and enhanced digital competencies.

However, the reviewed studies consistently caution against excessive dependence on AI-generated content. Overreliance on AI may reduce students' critical thinking, creativity, originality, and independent problem-solving skills. Ethical concerns relating to plagiarism, academic dishonesty, misinformation, and privacy remain significant challenges. Overall, the evidence suggests that the influence of AI is used responsibly, ethically, and under appropriate institutional guidelines.

Research Gap

Although numerous studies have examined Artificial Intelligence in education, several gaps remain.

First, many existing studies focus on developed countries where technological infrastructure and digital literacy levels are relatively high. Comparatively fewer studies have examined AI adoption within Nigerian tertiary institutions. Secondly, many studies investigate students' perceptions and acceptance of AI rather than its measurable influence on academic performance. Thirdly, because generative AI technologies such as ChatGPT, Google Gemini, and Microsoft Copilot are relatively recent innovations, long-term evidence regarding their educational impact is still limited.

Finally, institutional policies regulating ethical AI use in Nigerian tertiary institutions remain underdeveloped. More empirical research is therefore needed to establish appropriate frameworks for integrating AI into teaching, learning, assessment, and research while preserving academic integrity.

Conceptual Framework

The conceptual framework of this paper proposed that the effective use of Artificial Intelligence tools influences students' academic performance through improved learning processes.

The independent variables in respect to Artificial Intelligence Tools are ChatGPT, Google Gemini, Microsoft Copilot, Grammarly, QuillBot, Intelligent Tutoring Systems and

Adaptive Learning Platforms. The intervening variables are Digital literacy, Ethical use of AI, Internet accessibility, Institutional AI policy, Lecturer guidance and Students' learning motivation. Finally, the dependent variables on students' academic performance are improved examination scores, better assignment quality, higher GPA, enhanced research competence, improved critical understanding and increased academic productivity.

The framework suggests that the relationship between AI tool and academic performance is strengthened when students possess adequate digital literacy, receive proper guidance from lecturers, and use AI ethically and responsibly.

Discussion of Findings

The reviewed literature indicates that Artificial Intelligence (AI) has become an indispensable tool in tertiary education. AI-powered applications such as ChatGPT, Google Gemini, Microsoft Copilot, Grammarly, QuillBot, and intelligent tutoring systems have significantly transformed the teaching and learning process. These tools enable students to access information quickly, improve their academic writing, conduct literature reviews efficiently, solve complex problems, and receive personalized learning support.

The findings further reveal that AI contributes positively to students' academic performance by improving learning motivation, engagement, critical understanding of concepts (when used appropriately), research competence, and assignment quality. AI-powered adaptive learning systems allow students to learn at their own pace while receiving immediate feedback that enhances knowledge retention and academic achievement.

However, the review also highlights several concerns associated with AI usage. Excessive dependence on AI-generated content may discourage originality, creativity, independent thinking, and problem-solving abilities. Students who submit AI-generated assignments without proper evaluation risk violating academic integrity policies through plagiarism and other forms of academic misconduct. In addition, AI systems sometimes generate inaccurate or fabricated information 'AI hallucinations', making it essential for students to verify information obtained from these tools using credible academic sources.

To this end, the literature suggests that AI is neither inherently beneficial nor harmful, its influence depends largely on how responsibly students and lecturers integrate it into teaching, learning, and research activities.

Implications for Tertiary Institutions

The increasing use of AI tools has several implications for tertiary institutions according to Chan and Hu (2023) are:

1. **Curriculum Review:** Institutions should revise curricula to include AI literacy, prompt engineering, digital ethics, and responsible AI use.
2. **Teaching Practices:** Lecturers should redesign instructional strategies to incorporate AI as a learning support tool while encouraging critical thinking and independent learning.
3. **Assessment Methods:** Traditional take-home assignments should be complemented with oral presentations, practical exercises, project-based assessments, reflective writing, and supervised examinations to minimize AI misuses.
4. **Academic Integrity:** Institutions should establish clear guidelines governing acceptable AI use in assignments, projects and examinations.
5. **Capacity Building:** Continuous training should be organized for lecturers and students on effective and ethical use of AI technologies.
6. **Infrastructure Development:** Universities, Polytechnics, and Colleges of Education should improve internet connectivity, electricity supply, and access to digital learning resources to maximize the educational benefits of AI.

Challenges Affecting the Adoption of AI in Tertiary Institutions

Despite its enormous potential, several factors hinder the effective adoption of AI in tertiary institution. Kaplan and Haenlein (2020) highlighted some of them, namely: inadequate digital infrastructure; poor internet connectivity; erratic electricity supply; limited AI literacy among lecturers and students; high cost of premium AI applications; inadequate institutional policies regulating AI use; privacy and cybersecurity concerns; academic dishonesty and plagiarism; and biases and inaccuracies in AI-generated responses.

Addressing these challenges requires collaborative efforts among governments, educational institutions, technology providers, lecturers, students and policymakers.

Conclusion

Artificial Intelligence has emerged as one of the most significant technological innovations influencing higher education in the twenty-first century. AI tools have transformed students' learning experiences by improving access to information, facilitating personalized learning, enhancing academic writing, strengthening research capabilities, and supporting collaborative learning.

The review demonstrates that AI contributes positively to students' academic performance when use responsibly and ethically. Nevertheless, excessive dependence on AI may weaken critical thinking, creativity, originality, and independent learning while increasing the risk of academic misconduct.

Therefore, AI should complement-not replace-students' intellectual efforts. Tertiary institutions should develop comprehensive AI policies, promote AI literacy, redesign assessment methods, and encourage ethical AI practices to ensure that technological advancement contributes meaningfully to educational quality and graduate competence.

Suggestions

Based on the review, the following suggestions are made on artificial intelligence tools and their influence on students' academic performance in tertiary institutions:

1. Tertiary institutions should formulate clear institutional policies on the ethical use of Artificial intelligence in teaching, leaning, research and assessment.
2. AI literacy courses should be incorporated into undergraduate and postgraduate curricular to equip students with the knowledge and skills required for responsible AI usage.
3. Lecturers should receive regular professional development training on integrating AI into instructional practices without compromising academic integrity.
4. Students should be encouraged to use AI as a learning aid rather than a substitute for independent thinking and research.
5. Institutions should redesign assessment methods by emphasizing practical projects, oral examinations, laboratory work, case studies, and reflective assignments that require critical thinking.
6. Governments should invest in digital infrastructure, reliable electricity, high-speed internet connectivity, and educational technologies to support AI adoption in tertiary institutions.
7. Institutions should strengthen plagiarism detection systems and establish clear sanctions for unethical AI use.

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