

ADOPTION OF AI TUTORS AMONG UNDERGRADUATE STUDENTS OF THE UNIVERSITY OF ILORIN, KWARA STATE, NIGERIA

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Abstract

This study investigated the extent of adoption of AI tutors among undergraduate students at the University of Ilorin, Kwara State, Nigeria. A descriptive survey design was employed, and data was collected using a validated and structured questionnaire. The students were selected across five faculties using stratified sampling technique. A total of 384 students served as the sample size for this study. Findings revealed a high level of adoption and usage of AI tutors for solving academic problems, research, explaining difficult concepts, writing assistance, and exam preparation. Also, findings revealed that a high level of perceived benefits of AI tutors such as easy accessibility, personalization, and exposure to innovative learning methods among others. However, significant challenges in the use of AI tutors were equally identified such as unstable electricity supply, poor internet connectivity, and ethical concerns such as the risk of plagiarism and limited trust in AI-generated content. In view of these notable challenges in the use of AI tutors, the following recommendations were made to the University management such as provision of adequate infrastructure, promoting AI literacy, and developing ethical guidelines to ensure responsible and effective integration in the Nigerian higher educational system. In conclusion, this study has shown that AI tutors are increasingly becoming an integral part of students' learning routines, thereby having a strong potential to enhance learning outcomes.

Keywords: Artificial intelligence, AI tutors, Adoption, Extent of use, Usage

Introduction

The rapid adoption of Artificial Intelligence (AI) has transformed various sectors globally, especially in Higher Education Institutions (HEIs). AI tutors, also known as Intelligent Tutoring Systems (ITS), are becoming increasingly prominent in educational settings as tools to facilitate personalized learning experiences. These systems utilize machine learning algorithms, natural language processing, and data analytics to provide students with tailored educational support, helping them to learn at their own pace and improve their learning outcomes (Edinoh *et al.*, 2024). In the context of Nigeria, AI tutors are still emerging, with a growing interest in integrating such technologies into higher education, despite significant infrastructural and institutional barriers (Bali *et al.*, 2024).

AI tutors in education offer numerous benefits, both generally and specifically for students. On a broader scale, AI-based tutoring systems have the potential to transform learning by providing personalized and adaptive learning experiences that can meet the unique needs of each student. These systems can enhance accessibility to education, especially in settings with limited resources, by offering 24/7 availability and tailored feedback. Therefore, the integration of AI technologies in education has allowed for more efficient use of resources and improving the overall quality of teaching and learning.

In relations to students in HEIs, AI tutors can assist to adapt to the learning pace and preferences of students, making it easier for them to grasp difficult concepts. It also can provide instant feedback, increase engagement and reduce the frustration that often comes with delayed responses in traditional classrooms (Chen *et al.*, 2022). Despite the potential benefits of AI tutors, their use in Nigerian Universities is still at a low ebb due to challenges that need to be urgently addressed by these institutions to improve their adoption and use of AI tutors. One major challenge is the resistance from educators who are unfamiliar with the technology or perceive it as a threat to their roles, leading to reluctance in adopting AI tools (Olaseni, 2020). In addition, there are concerns about the effectiveness and credibility of AI tutors compared to human instructors, particularly regarding their ability to understand and respond to the diverse learning needs of students (Chen *et al.*, 2022). The high cost of AI technology, including software acquisition, implementation, and maintenance, is another barrier, especially in resource-constrained

environments like Nigerian universities (Bali *et al.*, 2024). Furthermore, infrastructural issues, such as unreliable internet connectivity and inadequate access to modern computing facilities, further exacerbate the situation (Edinoh *et al.*, 2024). There is therefore an urgent need to assess the extent of adoption of AI tutors among undergraduate students in the Nigerian environment.

Statement of the Problem

Despite global growth in AI-based tutoring, empirical studies on Nigerian students' adoption patterns of AI tutors remains limited, perhaps due to notable dearth of studies in the existing literature on the use of AI tutors among students within the Nigerian context. This lack of research leaves a gap in understanding the level of adoption, usage patterns, and factors influencing acceptance of AI technologies in higher education. In light of the above, this study assessed the level of adoption of AI tutors among students at the University of Ilorin, Kwara State, Nigeria.

Research Questions

The following research questions are raised in this study:

- i. What are the primary uses of AI tutors among students in University of Ilorin, Kwara State, Nigeria?
- ii. What is the extent of adoption of AI Tutors among students in University of Ilorin, Kwara State, Nigeria?
- iii. What is the level of effectiveness of AI tutors among students of the University of Ilorin, Kwara State, Nigeria?
- iv. What are the perceived benefits of AI Tutors among students of the University of Ilorin, Kwara State, Nigeria?
- v. What are the challenges faced in utilizing AI tutors among student of the University of Ilorin, Kwara State, Nigeria?

Literature Review

AI Adoption in Education Globally and in Nigeria

The adoption of Artificial Intelligence (AI) in education is transforming learning experiences worldwide, with its integration ranging from individualized learning tools to administrative efficiencies. Globally, AI has been increasingly implemented in higher education institutions to enhance teaching and learning. For instance, AI-powered tutors and chatbots are being used to support student learning by offering real-time assistance, personalized recommendations, and feedback tailored to individual needs (Chiu *et al.*, 2023). These advancements have made education more accessible and inclusive by addressing diverse learning styles and bridging gaps in teacher availability.

In developed nations, the integration of AI into education has been accelerated by substantial investments in infrastructure and research. Countries like the United States, South Korea, and China have demonstrated strong commitments to leveraging AI for educational purposes. These nations have adopted AI to manage student data, predict academic performance, and enhance engagement through immersive technologies such as virtual reality (Chen *et al.*, 2022). AI's ability to analyze large datasets and provide actionable insights has enabled institutions to design curricula that are responsive to evolving educational demands. In the same vein, a developing nation like Nigeria can benefit from AI adoption due to its ability to provide tailored learning needs to meeting diverse categories of students (Ogunyemi *et al.*, 2020).

In contrast, the adoption of AI in Nigeria faces several challenges despite its potential to revolutionize education. While there is growing interest in AI for educational purposes, infrastructural deficiencies such as limited access to electricity, unreliable internet connectivity, and inadequate technological resources hinder progress (Bali *et al.*, 2024; Edinoh *et al.*, 2024). These challenges are compounded by a lack of awareness and capacity among educators, many of whom remain hesitant to adopt AI tools due to concerns about job security and technological complexity (Cukurova *et al.*, 2023).

Nevertheless, there are promising initiatives in Nigeria aimed at integrating AI into educational systems. Studies have highlighted the potential of AI to enhance teaching and research programs in tertiary institutions, particularly by providing tools for personalized learning and automating administrative tasks (Edinoh *et al.*, 2024). Efforts to adopt AI are gradually gaining momentum, driven by both private sector investments and governmental initiatives aimed at modernizing education.

Concept of AI Tutors

AI tutors are educational tools powered by artificial intelligence designed to support and enhance learning by simulating the guidance and feedback typically provided by human instructors. They leverage on algorithms and machine learning to deliver personalized, adaptive, and interactive learning experiences (Lee, 2024). AI tutors are not limited to specific domains; they can assist in areas ranging from programming to language learning and general education, adapting to learners' unique needs and progress. The perception of AI tutors varies significantly across different stakeholders. For instance, Teachers, often view AI tutors with cautious optimism, appreciating their potential to reduce workload but expressing concerns about job security and the impersonal nature of AI instruction (Olaseni, 2020). Students, on the other hand, generally value AI tutors for their accessibility and ability to provide consistent, real-time support. Studies comparing AI tutors and human instructors reveal that students often prefer AI tutors for their objectivity and adaptability, though they still rely on human teachers for emotional and social engagement (Hajeer *et al.*, 2024).

Benefits of AI Tutors among Students in Higher Education Institutions

Several authors in the literature have identified benefits of AI tutors in higher education and enhancing the overall learning experience for students. One of the key benefits is personalization, as AI tutors adapt to individual learning styles, needs, and preferences. This personalized approach fosters a deeper understanding of the material and improves academic outcomes. Another significant advantage is the scalability of AI tutors, which enables them to support large numbers of students simultaneously. This is particularly valuable in regions like Nigeria, where overcrowded classrooms and limited teacher availability hinder effective learning. AI tutors bridge this gap by offering individualized attention and consistent support regardless of class size (Bali *et al.*, 2024).

AI tutors also enhance accessibility to education, allowing students to engage with learning materials and receive guidance anytime and anywhere. This flexibility is crucial for students with varying schedules or those in remote locations, as it ensures continuous learning without the constraints of time or geography (Edinoh *et al.*, 2024). Additionally, these tools provide instant feedback, enabling students to identify and correct mistakes promptly, which reinforces learning and builds confidence (Lee, 2024). Moreover, AI tutors can boost student motivation and engagement. By employing interactive features, such as chatbots and gamified learning experiences, they create a dynamic and enjoyable learning environment. Research has shown that students who interact with AI-based chatbots are more likely to stay motivated and develop a positive attitude toward learning (Chiu *et al.*, 2023). This engagement leads to improved retention and academic performance.

Lastly, AI tutors support the development of critical skills, such as problem-solving and self-directed learning. By encouraging students to explore topics independently and providing adaptive guidance, these tools help foster autonomy and critical thinking skills essential for success in higher education and beyond (Chen *et al.*, 2022). Additionally, the ability to offer diverse instructional formats such as visual, textual, and auditory ensures that students with different learning preferences benefit equally (Hajeer *et al.*, 2024).

On the whole, AI tutors significantly benefit students in higher education institutions by providing personalized learning, scalability, accessibility, motivation, and skill development. These advantages position AI tutors as a valuable asset for students in HEIs, thereby addressing challenges in traditional learning environments.

Challenges Faced in the use of AI-tutors among Students in HEIs Globally and in Nigeria

Despite the numerous benefits of AI tutors, several challenges may hinder their widespread adoption and optimal utilization among students in higher education institutions. One of the major concerns is the significant infrastructural gap, particularly in a developing country like Nigeria. Without adequate infrastructure, the potential of AI tutors to enhance learning experiences remains largely unrealized (Adeyemi *et al.*, 2025). Another critical challenge is the high cost associated with developing, deploying, and maintaining AI tutor systems. These tools often require substantial initial investments and ongoing operational costs, which can be prohibitive for institutions operating with limited budgets (Edinoh *et al.*, 2024). This financial constraint is especially pronounced in low-income regions, where funding for educational technology is scarce.

The issue of data privacy and security also emerges as a significant concern. AI tutors rely heavily on the collection and analysis of student data to provide personalized learning experiences. However, the lack of robust data protection policies and cybersecurity measures can expose students and institutions to potential risks, including breaches of sensitive information (Chen *et al.*, 2022). Also, resistance to change among educators and students can impede the adoption of AI tutors. Many educators' express apprehension about AI potentially replacing their roles or diminishing their value in the educational

process (Cukurova *et al.*, 2023). Furthermore, students may be hesitant to fully trust AI systems, particularly in contexts where these technologies are perceived as less credible compared to human instructors (Hajeer *et al.*, 2024). Lastly, the lack of a clear policy framework and regulatory guidelines for integrating AI tutors into educational systems presents a significant challenge. In many countries, including Nigeria, educational institutions lack the governance structures necessary to ensure the ethical use of AI in learning environments (Bali *et al.*, 2024). Without standardized protocols, issues such as algorithmic bias, accountability, and equitable access to AI tools remain unresolved.

Related Studies on the Level of Adoption of AI tutors among Student in HEIs Globally and in Nigeria

Several empirical studies have investigated the level of adoption of AI tutors among students in higher education institutions (HEIs) globally, but very few in Nigeria, shedding light on the varying degrees of integration, influencing factors, and associated challenges.

Adeyemi *et al.* (2025) explored the current state of AI adoption in Nigerian higher education institutions. A descriptive research design was adopted. A total of 300 participants were selected for the study using multi stage sampling technique. Findings revealed a high level of awareness and perceived benefits of AI tools in the selected Nigerian institutions. Also, in a study by Edinoh *et al.* (2024), the role of AI in teaching and research programs in Nigerian tertiary institutions was explored. The study found that AI integration in teaching and research was minimal, despite the availability of AI tools such as Google Scholar, Scite, and IBM Watson that could support research activities. The authors emphasized the need for capacity building and infrastructural development to foster AI adoption in Nigerian universities. This highlights the challenges Nigerian institutions face in implementing AI effectively due to resource constraints and limited access to advanced technologies.

In addition, Hajeer *et al.* (2024) compared the perceptions of AI tutors among 184 higher education students from Hungary and Spain. Their study revealed significant cultural differences in students' expectations of AI tutors. Hungarian students had higher expectations of AI tutors, possibly due to greater familiarity with these technologies and a stronger focus on adaptability in their education system. In contrast, Spanish students showed lower expectations and skepticism about AI tutors, which could be attributed to less exposure to AI in their education. These findings demonstrate that regional factors play a significant role in how AI tutors are perceived and highlight the influence of cultural and educational contexts on AI adoption.

On the whole, these empirical studies collectively highlight the growing interest and potential for AI tutors in higher education, but also underscore significant challenges to their widespread adoption. While AI tutors have the capacity to enhance learning experiences, their integration is hindered by issues such as limited infrastructure, teacher resistance, and cultural differences. To foster successful AI adoption in HEIs, especially in Nigeria, it is essential to address these barriers through improved infrastructure, capacity building, and positive engagement with educators and students. However, in addressing this research gap, an empirical study in the Nigerian context was undertaken to determine the extent of adoption of AI tutors among undergraduate students in higher institutions of learning, a case study of the University of Ilorin, Kwara State, Nigeria.

Theoretical Framework.

This study adopted the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) to support the extent of adoption of AI tutors among students in HEIs. These models provide valuable insights into how users, particularly students accept and utilize new technologies, such as AI-based tutoring systems, in education.

Technology Acceptance Model (TAM)

The TAM was developed by Davis in 1989, it is one of the most prominent and widely applied models for understanding technology acceptance. TAM posits that two primary factors influence an individual's acceptance of technology and perceived Ease of Use (PEOU) and Perceived Usefulness (PU). Perceived usefulness refers to the degree to which a person believes that using a particular technology will enhance their learning outcomes or job performance, while perceived ease of use refers to the extent to which a person perceives a technology as being free of effort to use.

In the context of AI tutors, these two factors are especially important. Students' perceptions of how AI tutors can enhance their learning experience (i.e., perceived usefulness) and how easy or difficult they find it to interact with these systems (i.e., perceived ease of use) will significantly determine their intention to use AI tutors. TAM has been extended over the years to include additional factors like social influence

and trust, which also play a role in the adoption of educational technologies. This is evident in recent studies that suggest external factors, such as infrastructure and teacher competence, as factors that can further influence the successful integration of AI tutors in educational environments (Bali *et al.*, 2024).

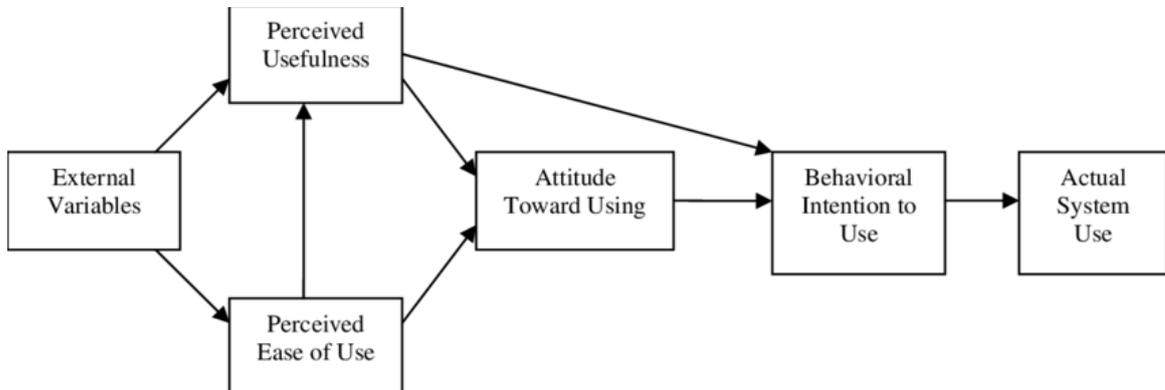


Figure 1: Davis F. D. (1989). Technology Acceptance Model

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), was proposed by Venkatesh *et al.* (2003), is another influential framework that integrates various models of technology acceptance, including TAM. UTAUT identifies four key constructs that influence technology acceptance: performance expectancy, effort expectancy, social influence, and facilitating conditions.

- i. **Performance expectancy:** is similar to perceived usefulness in TAM and refers to the degree to which a person believes that using a technology will help them achieve better performance. For AI tutors, performance expectancy could refer to how effective students perceive the AI tutor to be in improving their learning outcomes.
- ii. **Effort expectancy:** It is analogous to perceived ease of use in TAM, refers to the perceived ease of using the technology. For AI tutors, this factor would include students' perceptions of how easy it is to interact with and navigate the AI system.
- iii. **Social influence:** represents the degree to which individuals perceive that important others (such as peers, teachers, or family members) believe they should use the technology. This factor highlights how external pressures or encouragement from others can influence adoption.
- iv. **Facilitating conditions:** It refer to the resources and support available to individuals for the effective use of technology, such as infrastructure, training, and technical support. In the context of AI tutors, facilitating conditions might include factors such as access to internet-connected devices, stable internet connections, and teacher training on how to effectively integrate AI systems into the classroom.

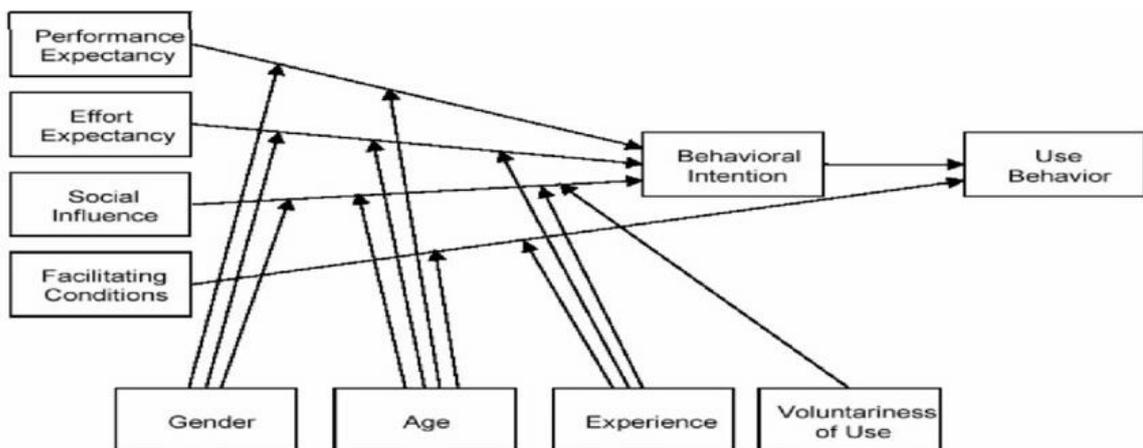


Figure 2: Venkatesh *et al.* (2003). Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT also takes into account moderating factors like gender, age, experience, and voluntariness of use, which can influence the relationship between the core constructs and technology adoption. This broader scope makes UTAUT a particularly relevant model for examining AI tutor adoption, as educational environments are often influenced by external factors like social influence and available resources.

Both TAM and UTAUT provide essential insights into the factors that influence the adoption of AI tutors in higher education institutions (HEIs). According to TAM, the perceived usefulness and perceived ease of use of AI tutors are central to students' and educators' decisions to adopt these technologies. If AI tutors are seen as beneficial in improving learning outcomes and easy to use, students are more likely to engage with them. Meanwhile, UTAUT expands on this by adding the constructs of performance expectancy, effort expectancy, social influence, and facilitating conditions, which together offer a more comprehensive view of the adoption process. For instance, in Nigeria, where AI adoption in education is still in its early stages, factors such as facilitating conditions, including access to infrastructure and teacher training would play a crucial role in determining the successful integration of AI tutors into the educational system (Edinoh *et al.*, 2024).

Methodology

This study employed a quantitative research design, using a structured and validated questionnaire to elicit responses from students in the study area. The target population for this study comprised of 15,494 undergraduate students in selected five faculties within the university of Ilorin. These are Faculty of Communication and Information Sciences, Faculty of Engineering, Faculty of Environmental Sciences, Faculty of Social Sciences, and Faculty of management Sciences respectively. The total sample size of 384 students was derived from the population of the selected five faculties using Krejcie & Morgan (1970) sample size determination table.

A structured questionnaire was the main instrument for data collection, It was divided into five sections. Section A captured demographic details such as gender, age, faculty, and level of study. Section B examined the extent of adoption using a 4 point Likert-scale items measuring how students integrate AI tutors into their academic routines. Section C focused on students' perception of the effectiveness of AI tutor, while Section D explored perceived benefits of AI tutors among students. Lastly, Section E identified challenges including internet access, electricity, trust, and ethical concerns related to AI tutor use.

The research instrument underwent a rigorous process to ensure its validity and reliability. Face validity of the questionnaire items was achieved through Two experts in the the field of Information Technology. Content validity was equally achieved through a pilot study involving 25 undergraduate students from various faculties who were not part of the final sample. To further confirm the reliability of the instrument, the internal consistency of the Likert-scale items was tested using Cronbach's Alpha reliability test. The reliability coefficients for each of the measured scales exceeded the accepted threshold of 0.70, indicating that the instrument was both stable and dependable.

Table 3.1.3: Cronbach's Alpha Reliability Scores for the Developed Scales

S/N	Scale	No. of Items	Source	Cronbach's Alpha
1	Extent of Adoption of AI Tutors	5	Self-developed	0.81
2	Level of Effectiveness of AI Tutors	5	Self-developed	0.84
3	Perceived Benefits of AI Tutors	6	Self-developed	0.88
4	Challenges with AI Tutor Adoption	7	Self-developed	0.79

4.1 Presentation of Results

Table 4.1.1 Demographic Information of Respondents

Demographic Attributes	Frequency	Percentage
Gender	Male	79 28.1%
	Female	202 71.9%
	Total	281 100.0%
Age group	16–20 years	100 35.6%

Investigating the Adoption of AI Tutors Among Undergraduate Students of the University of Ilorin, Kwara State, Nigeria

	21–25 years	159	56.6%
	26–30 years	17	6.0%
	Above 30 years	5	1.8%
	Total	281	100.0%
Faculty	FCIS	56	19.9%
	FE	64	22.8%
	FES	18	6.4%
	FSS	67	23.8%
	FMS	76	27.0%
	Total	281	100.0%
Level of study	100 Level	50	17.8%
	200 Level	97	34.5%
	300 Level	92	32.7%
	400 Level	35	12.5%
	500 Level	7	2.5%
	Total	281	100.0%

Table 4.11 shows the demographic characteristics of respondents in the surveyed area. In terms of gender 79(28.1%) were male, while a significantly larger proportion, 202(71.9%), were female. This suggests that majority of the respondents were female students. In terms of age category, 100(35.6%) of the respondents were between 16–20 years, 159(56.6%) fell within the 21–25 years bracket, 17(6.0%) were aged 26–30 years, and only 5(1.8%) were above 30 years. This distribution shows that a large proportion of the respondents are in their early twenties, which aligns with the typical age range of undergraduate students in Nigerian universities. In terms of faculty representation, 56(19.9%) of the respondents were from the Faculty of Communication and Information Sciences (FCIS), 64(22.8%) Faculty of Education (FE), 18(6.4%) from the Faculty of Environmental Sciences (FES), 67(23.8%) Faculty of Social Sciences (FSS), and 76(27.0%) from the Faculty of Management Sciences (FMS). This reveals that the highest number of respondents came from the Faculty of Management Sciences. And lastly, in terms of level of study, 50(17.8%) of the respondents were in 100 Level, 97(34.5%) 200 Level, 92(32.7%) 300 Level, 35(12.5%) in 400 Level, and only 7(2.5%) in 500 Level.

Analysis of Research Questions

Research Question One: What are the primary uses of AI Tutors among Students of the University of Ilorin, Kwara State?

Table 4.2.1: Primary Uses of AI Tutor among Students of the University of Ilorin, Kwara State

S/N	Primary use of AI Tutor	Frequency	Percentage
1	Writing assistance	144	51.8%
2	Solving academic problems	189	68.0%
3	Research	189	68.0%
4	Test/Exam preparation	138	49.6%
5	Explaining difficult concepts	161	57.9%

Table 4.2.1 presents the primary uses of AI tutors among students. Majority, 189(68.0%) reported that AI tutor is used for solving academic problems and conducting research. This was followed by 161(57.9%) in explaining difficult concepts. 144(51.8%) for writing assistance, while 138(49.6%) relied on AI tutors for test or examination preparation. These findings indicate that students employ AI tutors for diverse academic purposes, with problem-solving, research, and understanding complex concepts emerging as the leading areas of use.

Research Question Two: What is the extent of adoption of AI Tutors among student in University of Ilorin, Kwara State, Nigeria?

Table 4.2.2: Extent of Adoption of AI Tutors among Students of the University of Ilorin, Kwara State, Nigeria

S/N	Extent of Adoption of AI tutors	SA F(%)	A F(%)	D F(%)	SD F(%)	Total	Mean	Std. Dev
1	I actively use AI tutors to support my academic tasks.	166 (59.1%)	93 (33.1%)	15 (5.3%)	7 (2.5%)	281	3.49	0.713
2	I prefer using AI tutors over traditional learning resources for academic support.	55 (19.6%)	147 (52.3%)	63 (22.4%)	16 (5.7%)	281	2.86	0.794
3	I incorporate AI tutors into my daily or weekly study routine.	84 (29.9%)	152 (54.1%)	34 (12.1%)	11 (3.9%)	281	3.10	0.754
4	I rely on AI tutors for help in understanding complex course materials.	102 (36.3%)	134 (47.7%)	37 (13.2%)	8 (2.8%)	281	3.17	0.762
5	I use AI tutors to aid my class assignment.	142 (50.5%)	121 (43.1%)	14 (5.0%)	4 (1.4%)	281	3.43	0.657
Grand Mean							3.21	

Table 4.2.2 shows a high level of Adoption of AI tutors among students of the University of Ilorin, with a grand mean score of 3.21 on a 4 point scale. Specifically, 259(92.2%) respondents agreed that they actively use AI tutors to support their academic tasks. 20 (71.9%) agreed they prefer AI tutors over traditional learning resources, while, 236(84.0%) agreed to incorporate AI tutors into their routine. Similarly, 236(84.0%) agreed that they rely on AI tutors to understand complex course materials. Finally, 263(93.6%) of the respondents agreed that they use AI tutors to aid their class assignments. These findings indicate that AI tutors have been widely adopted by students and are integrated into their academic practices. This findings suggest a high overall level of adoption of AI tutors among students, and are seen as effective tools for enhancing learning and academic performance.

Research Question Three: What is the level of effectiveness of AI tutors among student of the University of Ilorin, Kwara State, Nigeria?

Table 4.2.3: Level of Effectiveness of AI Tutors among Students of the University of Ilorin

S/N	Level of Effectiveness of AI Tutors	SA	A	D	SD	Total	Mean	Std. Dev
1	AI tutors help me better understand complex academic concepts.	164 (58.4%)	106 (37.7%)	11 (3.9%)	-	281	3.54	0.572
2	I feel more confident completing schoolwork with the help of AI tutors.	91 (32.4%)	131 (46.6%)	55 (19.6%)	4 (1.4%)	281	3.10	0.754
3	AI tutors have positively impacted my ability to study on my own.	135 (48.0%)	113 (40.2%)	30 (10.7%)	3 (1.1%)	281	3.35	0.712
4	AI tutors help me adapt more easily to learning than some human teachers.	113 (40.2%)	107 (38.1%)	49 (17.4%)	12 (4.3%)	281	3.14	0.854
5	AI tutors effectively provide the academic support I need when I need it.	142 (50.5%)	111 (39.5%)	19 (6.8%)	9 (3.2%)	281	3.37	0.751
Grand Mean							3.30	

Table 4.2.3 shows a high level of effectiveness of AI Tutors among students of the University of Ilorin, with a grand mean score of 3.30 on a 4 point scale. This indicates a generally high perception of effectiveness among the respondents. For instance, majority of students 270 (96.1%) agreed to the statement that AI tutors help them to better understand complex academic concepts, 253(90.0%) of the respondents agreed that AI tutors provide effective academic support when needed. 248(88.3%) affirmed that AI tutors positively impacted their ability to study independently. Although slightly lower, 222(78.9%)

Investigating the Adoption of AI Tutors Among Undergraduate Students of the University of Ilorin, Kwara State, Nigeria

expressed confidence in completing schoolwork with the help of AI tutors; while 220(78.3%) respondents agreed that AI tutors helped them adapt better to learning than some human teachers. Overall, this result shows that students perceive AI tutors as effective tools in enhancing their academic performance and supporting their learning processes.

Research Question Four: What are the perceived benefits of AI Tutors among students of the University of Ilorin, Kwara State, Nigeria?

Table 4.2.4: Perceived Benefits of AI Tutors among Students of the University of Ilorin, Kwara State, Nigeria

S/N	Perceived Benefits of AI Tutors	SA F(%)	A F(%)	D F(%)	SD F(%)	Mean	Std. Dev
1	AI tutors make learning more accessible anytime and anywhere.	176 (62.6%)	95 (33.8%)	8 (2.8%)	2 (0.7%)	3.58	0.586
2	AI tutors offer personalized learning experiences tailored to my needs.	130 (46.3%)	136 (48.4%)	12 (4.3%)	3 (1.1%)	3.40	0.625
3	AI tutors improve my motivation and interest in academic activities.	131 (46.6%)	114 (40.6%)	34 (12.1%)	2 (0.7%)	3.33	0.713
4	AI tutors help me to study independently and build confidence.	139 (49.5%)	106 (37.7%)	31 (11.0%)	5 (1.8%)	3.35	0.746
5	AI tutors help me manage my study time more effectively.	130 (46.3%)	115 (40.9%)	32 (11.4%)	4 (1.4%)	3.32	0.730
6	AI tutors expose me to new and innovative approaches to learning.	144 (51.2%)	106 (37.7%)	24 (8.5%)	7 (2.5%)	3.38	0.746
Grand Mean Score						3.39	

Table 4.2.4 presents the perceived benefits of AI tutors among students of the University of Ilorin, with a grand mean score of 3.39 on a 4 point scale. This indicates a high overall perception of AI tutors as beneficial academic tools. Majority of students 271(96.4%) of the respondents agreed that AI tutors make learning more accessible anytime and anywhere. 266(94.7%) of the students agreed that AI tutors offer tailored learning experiences. 245(87.2%) agreed that AI tutors improved their academic interest and engagement. 245(87.2%) of the respondents equally agreed that AI tutors helped them study independently and build confidence. 250(88.9%) of the students agreed that AI tutors expose them to innovative learning approaches. Overall, this results depict that students find AI tutors to be very beneficial in terms of accessibility, personalization, motivation, time management, and independent learning.

Research Question Five: What are the challenges faced in utilizing AI tutors among students of the University of Ilorin, Kwara State, Nigeria?

Table 4.2.5: Challenges of AI Tutors Adoption among Students of the University of Ilorin, Kwara State, Nigeria

Table 4.2.5 Challenges of AI Tutors Adoption among Students of the University of Ilorin, Kwara State, Nigeria

S/N	Challenges of AI Tutors	SA F(%)	A F(%)	D F(%)	SD	Mean	Stdv
1	I experience poor or unstable internet access which limits my use of AI tutors.	91 (32.4%)	117 (41.6%)	55 (19.6%)	18 (6.4%)	3.00	0.882
2	I have limited awareness of the available AI tutor tools.	45 (16.0%)	85 (30.2%)	82 (29.2%)	69 (24.6%)	2.38	1.025
3	I find it difficult to trust the accuracy or reliability of AI tutor responses.	73 (26.0%)	107 (38.1%)	71 (25.3%)	30 (10.7%)	2.79	0.949
4	I am not able to use AI tutors to achieve complex tasks.	67 (23.8%)	74 (26.3%)	109 (38.8%)	31 (11.0%)	2.63	0.966
5	If not careful, AI tutors may lead one to committing academic dishonesty or plagiarism.	122 (43.4%)	82 (29.2%)	54 (19.2%)	23 (8.2%)	3.08	0.975
6	I am unable to use AI tutors as often as the need arises due to incessant electricity supply.	132 (47.0%)	79 (28.1%)	51 (18.1%)	19 (6.8%)	3.15	0.949
7	I find it difficult to integrate AI tutors into my current study routine due to lack of interest.	49 (17.4%)	99 (35.2%)	98 (34.9%)	35 (12.5%)	2.58	0.919
Grand Mean						2.80	

Table 4.2.5 presents the challenges encountered by students in adopting AI tutors, with a grand mean score of 2.80 on a 4-point scale. This indicates a moderate overall level of challenges are experienced by students while using AI tutors. For instance, 211(75.1%) reported a major challenge of limited access to electricity, which prevented them from using AI tutors when needed. 208(74.0%) of the respondents reported poor or unstable internet connectivity as another significant challenge. In addition, 204(72.6%) of the students acknowledged that AI tutors could lead to academic dishonesty or plagiarism if not used responsibly. Based on these results, infrastructural issues, particularly, electricity and internet connectivity emerged as the most pressing challenges affecting AI tutor adoption. Concerns related to academic integrity and the reliability of AI-generated responses also appear noteworthy.

Discussion of Findings

This study has demonstrated a substantial level of adoption of AI tutors among undergraduate students at the University of Ilorin. These findings are discussed in line with the research questions raised earlier and the extant literature:

Findings revealed that majority 189(68.0%) reported that AI tutor is used for solving academic problems and conducting research, followed by 161(57.9%) explaining difficult concepts. 144(51.8%) for writing assistance, while 138(49.6%) relied on AI tutors for test or examination preparation. These findings supports past studies that affirmed AI tutors serve diverse uses to students (Edinoh *et al.*, 2024; Chen *et al.*, 2022).

Findings revealed a high level of adoption with a grand mean score of 3.21. Majority of the students, 93.6% reported that AI tutors aid them in executing their class assignments, while, 92.2%, agreed that they actively use AI tutors to support academic tasks. These results affirm that AI tutors have been widely integrated into students’ academic workflows. This finding is consistent with past studies (E.g Chiu *et al.*, 2023; Chen *et al.*, 2022) who emphasized a growing integration of AI into student learning processes and diverse academic engagements.

Findings show a high level of effectiveness with a grand mean score of 3.30. Majority, 96.1% agreed that AI tutors help them understand complex academic concepts, while 91.8% acknowledged improved ability to study independently. These findings align with Lee (2024) who found that AI deliver personalized, adaptive, and interactive learning experiences, thereby showing that they are effective tools in the hands of students due to their numerous benefits.

Findings show a high level of perceived benefit with a grand mean score 3.39. Majority, 96.4% agreed that AI tutors make learning more accessible anytime and anywhere Other notable benefits included(94.7%) personalized learning experiences, (87.2%) increased motivation and (87.2%) improved study time management Furthermore, 88.9% agreed that AI tutors expose them to innovative learning approaches. These findings reinforce past studies which affirmed that AI systems provide flexible and personalized learning support (Adeyemi *et al.*,2025; Bali *et al.*, 2024; Edinoh *et al.*, 2024).

Investigating the Adoption of AI Tutors Among Undergraduate Students of the University of Ilorin, Kwara State, Nigeria

Findings revealed a moderate level of challenges with a grand mean score of 2.80. Notable and significant challenges identified were infrastructural issues. 75.1% reported unstable electricity supply, 74.0% poor internet access, 72.6% acknowledging the risk of plagiarism and academic dishonesty, while 64.1% expressing mistrust in AI-generated responses. These challenges are consistent with Adeyemi *et al.* (2025) who highlighted infrastructural and ethical risks as major barriers to AI adoption in African educational institutions.

Conclusion

The study has shown that AI tutors are increasingly becoming an integral part of students' learning routines, thereby having a strong potential to enhance learning outcomes among undergraduate students at the University of Ilorin. Students perceive these tools as effective in enhancing learning and supporting various academic activities. AI tutors are especially valued for their accessibility, flexibility, and ability to provide personalized and independent learning support. In conclusion, although the level of adoption of AI tutors is high, some challenges relating to infrastructural issues and ethical considerations hinder its optimal usage among students in the surveyed area; therefore, there is an urgent need to address these concerns for effective use of AI tutors.

Recommendations

In view of the imminent challenges hindering the optimal usage of AI tutors among students, the following recommendations are hereby made:

- i. University management should organize workshops to train students on effective use of AI tools for academic purposes.
- ii. University management should support the formal integration of AI tools into academic programs and course delivery.
- iii. University should provide essential infrastructures, especially stable electricity and internet access, to facilitate uninterrupted access to AI tutors by students.
- iv. University administrators should sensitize students on responsible and ethical AI usage to mitigate plagiarism and foster academic integrity.
- v. Academic staff should incorporate AI tutors as complementary tools in their teaching to enhance learning outcomes.

Implications

This study has proven that AI tutors are essential tools in educational settings due to their immense benefits. However, future research can explore the long-term impact of AI tutor usage on students' academic performance to assess whether consistent engagement leads to measurable improvements in learning outcomes over time. Comparative studies between public and private universities are also recommended, as these would help ascertain whether adoption patterns and perceptions differ across institutional types.

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