



ARTIFICIAL INTELLIGENCE USAGE, ENVIRONMENTAL FACTORS AND STUDY HABITS AS PREDICTORS OF UNDERGRADUATES' ACADEMIC ACHIEVEMENT IN THE UNIVERSITY OF IBADAN, NIGERIA

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Abstract

This study investigated Artificial Intelligence (AI) usage, environmental factors, and study habits as predictors of undergraduates' academic achievement in the University of Ibadan. The study was anchored to the Technology Acceptance Model (TAM) and Social Learning Theory (SLT), which stressed that the extent to which an individual considers utilising a specific system positively influences job or task performance. Ex-post facto design was employed in the study. A multistage sampling procedure was employed to select 300 undergraduates from six faculties in the University of Ibadan. Four research questions and three validated instruments guided the study, namely: Artificial Intelligence Usage, Environmental Factors and Study Habits Questionnaire ($r=0.89$), Environmental Factors Inventory ($r=0.76$), Undergraduates Achievement Scores in GES 301. Data were analysed using inferential statistics at a 0.05 level of significance and descriptive statistics. University of Ibadan undergraduates deploy AI for productive academic tasks under a conducive academic environment; relationships exist between AI adoption ($r=0.375$, $p=0.000$), environmental factor ($r=0.257$, $p=0.000$) and study habits ($r=0.23$, $p=0.000$), and undergraduates' academic achievement in GES 301, respectively. There is a significant composite contribution of artificial intelligence adoption, environmental factors and study habits ($F_{(3, 296)}=18.115$; $R=0.394$, $R^2=0.155$). When undergraduates deploy artificial intelligence productively to ease their academic tasks, this will go a long way to improving academic achievement. It is therefore recommended that universities should develop clear AI usage policies for productive guidance on academic tasks and create enabling environments for optimum learning.

Keywords: Artificial-Intelligence, Environmental-factor, Study-habits, Academic Achievement in GES 301

Introduction

Tertiary institutions are primarily concerned with advanced instruction, research endeavours, and societal development through community engagement, thereby playing a critical role in meeting the human capital requirements of a nation. The attainment of the broad objectives of tertiary education, however, depends on the efficient mobilization of both human and material resources. One key approach to achieving this is the integration of emerging technological tools, such as Artificial Intelligence (AI), into the administration, instruction, facilitation, and advancement of higher education in Nigeria. On a global scale, emphasis is increasingly placed on the utilization of Information and Communication Technologies (ICTs) and related innovations to enhance performance outcomes. The value of these technologies lies in their ability to promote efficiency, accuracy, cost reduction, and expanded accessibility. Artificial Intelligence, which has evolved as a branch of ICT, entails the use of computer-based systems and specialized software to perform tasks that traditionally rely on human intelligence.

In higher education, AI-driven support systems have attracted growing scholarly and institutional interest because of their potential to enrich student learning, streamline administrative processes, and provide personalized educational experiences (Ajani, Akinyemi, & Adedoyin, 2022). The versatility of AI is evident in its wide-ranging applications across domains such as healthcare, education, entertainment, communication, commerce, transportation, governance, the arts and the humanities. Researchers like Ogunode & Gregory (2023) noted that the integration of Artificial Intelligence (AI) into education covers multiple dimensions, including teaching and research support, problem-solving, perception, and language processing.

Within the educational sector, and especially in tertiary institutions, the usage of AI technologies holds considerable potential for enhancing teaching, learning, research, administration, community service, and overall service delivery. Consequently, AI can be regarded as a critical driver of innovation in the management of higher education, fostering greater efficiency and effectiveness in institutional operations. Also, Bhbosale, Pujari, & Multani (2020) emphasized that Artificial Intelligence reduces the burden of human labor as it is the science and engineering of making intelligent machines for humans' use and it possesses the ability to think, reach, and surpass ordinary human-level intelligence.

Nevertheless, the effective integration of AI within universities is contingent upon the willingness and preparedness of students, who constitute central stakeholders in the teaching and learning environment (Akpomi, Ogar, & Umoh, 2022; Zhai & Wang, 2021). Within higher education, AI-driven support systems employ machine learning techniques to process extensive datasets and generate actionable insights. These technologies can assist institutions in refining course timetabling by taking into account students' preferences and academic outcomes, thereby enhancing both satisfaction and retention rates. The integration of Artificial Intelligence (AI) into education offers a wide range of

benefits for teaching and learning processes. It is, however, essential to recognise that the rapid pace of technological advancement itself provides strong justification for incorporating AI into the educational sector.

In this context, several advantages of adopting AI in education can be identified as follows: AI-powered tutoring systems contributes to the individualization of student' learning by adapting courses and programmes to align with learners' specific needs and provide targeted support that enables students to address areas of weakness while simultaneously refining their existing competencies; AI facilitates prompt interaction between instructors and students, while also supporting continuous, around-the-clock access to educational resources on a global scale; It creates opportunities for seamless collaboration between teachers and students, both within the classroom environment and beyond traditional learning spaces; AI has the capacity to generate real-time data outputs of various kinds, tailored to the specific requests or needs of the user; and by enabling personalised learning experiences, AI facilitates the automation of assessment and feedback processes, delivers on-demand academic support, and broadens access to quality education. There is a need for clarification that AI is a tool but not human cognition; however, it can be combined with human cognition to facilitate hybrid intelligence.

It is pertinent to note that environmental factors such as access to resources, study environments, peer influence, and home support systems continue to play a vital role in AI-powered teaching and learning. Bhosale et al (2020) characterised the school environment as the foundation upon which all institutional activities are built. Within this setting, the lecture room occupies a central position, functioning as the primary site of interaction between lecturers, students, and instructional materials. Such interactions give rise to what is commonly described as the teaching–learning context. The lecture room environment can be understood as a combination of multiple factors that collectively foster learning within a conducive atmosphere. Each lecture room is distinct, as various variables interact to shape its overall climate and influence the learning experience.

Establishing an effective learning environment depends on several key factors. For any academic institution, the primary objective is to cultivate an atmosphere that encourages and supports learning. To realize this goal, all elements within the lecture room must, in one way or another, contribute to fostering the learning process (Ogunode & Gregory, 2023). A school environment can be understood in two dimensions: the physical and the social. The physical aspect involves elements such as the state of the building, classroom fixtures, the availability and quality of furniture, desks and seating arrangement, roofing, ceiling, lighting, ventilation, and the condition of the floor (Fazal, Sarwar, Nargiza, Khan & Qi, 2023).

On the other hand, the social aspect is shaped by the leadership style adopted by lecturers (whether democratic, authoritarian, transformational, transactional, or laissez-faire) and by the nature of student participation, which may be collaborative, individualistic, or competitive (Khaizaar & Hidayat, 2022). Miravet, Ciges, & García (2024) emphasized that a conducive learning environment must ensure sensory ease while supporting strong auditory and visual engagement. Although there is no universally accepted definition of an unfavorable environment, it is generally understood as one in

which learners experience discomfort-whether physical, emotional, or academic-for any reason (Jena & Jena, 2020).

In addition, the academic environment comprises several sub-factors that influence students' performance within an institution. Among these are the classroom's physical layout, the instructional approaches and behaviours demonstrated by teachers, as well as the use of teaching materials, which were the specific variables examined in this study. Osei-Himah, Parker, & Naah (2022) emphasise that the physical design and appearance of a classroom play a crucial role in shaping its effectiveness. A well-structured layout not only fosters a task-focused atmosphere but also supports students' social and emotional development. Meanwhile, study habits like time management, class attendance, revision practices, and learning strategies also remain critical to academic performance.

Study habits remain one of the strongest indicators of students' academic success, both in theory and practice. It has been consistently shown that diligent students achieve outstanding results in examinations as well as in extracurricular engagements (Roya & Murthy, 2024). Study habits are deliberate methods and strategies a learner adopts to consolidate classroom learning and achieve mastery of a subject (Sasi & Anju, 2020). They are also regarded as a significant predictor of academic achievement, cutting across categories and gender differences (Silverrajoo & Hassan, 2020); equip learners with the ability to think critically, evaluate, analyse, judge, imagine, and address everyday challenges more effectively (Jena & Jena, 2020; John, Bulus & Tansom, 2020); play an essential role in shaping both the cognitive and affective abilities of individuals (Rabia, Mubarak, Tallat, & Nasir, 2022); go beyond cognitive skills such as memory, comprehension, and critical thinking, as they also connect with non-cognitive or affective capacities (Vasu & Venkatarathanam, 2022) and influence students in diverse ways irrespective of gender, shaping their behaviour, motivation, mental and physical development, interpretive abilities, as well as their values and beliefs (Alavi, Lesani, & Mahdavinia, 2024).

The close relationship between study habits and scholastic outcomes indicates that strong study practices are a major determinant of learners' academic performance (Kaur & Pathania, 2023). Moreover, study habits and academic performance serve as key measures for enhancing the quality of education at different levels (Lawrence, 2024). The academic achievement of university undergraduate students is influenced by various factors ranging from personal to technological and environmental. The advancement of digital technology has positioned Artificial Intelligence (AI) as a significant resource for students in their academic pursuits, thereby boosting their study habits. Tools like ChatGPT, Claude, Grammarly, and AI-based study and note-taking platforms are reshaping the way learners engage with and experience education. However, there is still a knowledge gap in understanding how AI usage affects academic outcomes in Nigerian universities, particularly at the University of Ibadan.

Also, understanding how AI usage, environmental factors, and study habits collectively and independently predict academic success is crucial in informing educational policy and practice. Research evidence indicates that Artificial Intelligence

(AI) holds significant potential in addressing many of the pressing challenges confronting educational institutions. When effectively implemented, AI can help minimize these challenges, foster innovative teaching and learning practices, and contribute to advancing Nigeria's progress toward the Sustainable Development Goals (SDGs). Building on this perspective, it is pertinent to note the several challenges associated with the usage of AI in education which are identified as follows: the integration of AI technologies into classroom practices presents the challenge of guaranteeing equitable access, ensuring that all students benefit regardless of their socio-economic background or learning environment; difficulty of integrating AI within classrooms in ways that bridge the digital divide rather than intensify pre-existing social and educational inequalities and the absence of sufficient infrastructure.

Other challenges include lack of stable internet connectivity, inconsistent electricity supply, lack of access to appropriate digital devices required for implementing AI-based solutions; inadequate skills and awareness, among both learners and educators, on how to effectively use and evaluate AI-based educational solutions, as well as how to protect their privacy and security in the digital environment; absence of regulatory frameworks and policy that can support the development, deployment, and governance of AI in education, thereby developing tools to check the percentage use of AI by students which will further assist educators to focus on the process, emphasizing the learning journey and not the final product.

This study explored the dynamics within the specific context of the University of Ibadan General Studies Programme (GSP). The school environment constitutes a critical component in the functioning of any institution, particularly at the university level. It serves as a space that unites students and provides them with opportunities to fulfil the broader objectives of education. Within this environment, the lecture room plays a central role, as it accommodates the majority of instructional activities, facilitates coordinated learning experiences, and serves as the hub for diverse teaching and instructional practices.

In recent years, Artificial Intelligence (AI) has become a transformative force in higher education, revolutionising the way knowledge is delivered, processed, and applied. The integration of AI in academic environments influences students' learning behaviours, access to resources, and overall academic achievement. At the University of Ibadan, the emphasis on technological literacy and scientific innovation is echoed in the design and delivery of General Studies (GES) courses such as GES 301: Introduction to Entrepreneurial Skills. GES 301 aims to foster self-reliance, creativity, entrepreneurial skills and digital competence among students. Through this course, undergraduate students are exposed to the entrepreneurial applications of technology, including digital tools and innovations such as AI-driven business intelligence, automation, and e-commerce platforms.

It also prepares undergraduate students to adapt to the evolving demands of the labor market by encouraging the usage of smart study tools, critical thinking, and innovation, all of which are integral to academic and career success. This foundational course underscores the university's commitment to equipping students not only with discipline-specific knowledge but also with essential skills and awareness needed to

thrive in a rapidly changing technological world. Therefore, examining the role of AI usage, environmental factors (such as access to resources, power supply, and institutional policies), and study habits becomes critical in understanding what predicts and enhances academic achievement among undergraduate students at the University of Ibadan.

The Problem

Artificial Intelligence (AI) is increasingly shaping multiple fields, with education being one of its most impacted areas. Universities are now embracing AI-powered solutions, ranging from adaptive learning systems and virtual tutoring programmes to intelligent note-taking applications, to provide tailored learning opportunities, simplify administrative processes, and boost undergraduate students' academic success. However, despite its potential, the integration of AI in education still faces many challenges, including privacy risks, high implementation costs, technical barriers, absence of regulatory frameworks and policy that can support the development, deployment, and governance of AI in education, thereby developing tools to check the percentage use of AI by students which will further assist educators to focus on the process, emphasizing the learning journey and not the final product. Although there are several empirical investigations on artificial intelligence in relation to students' performance in some specific subjects, there appears to be a limited number of empirical studies examining the combined impact of Artificial Intelligence usage, environmental factors, and study habits on undergraduate students' academic achievement in higher institutions, particularly within the University of Ibadan. To address this gap, the present study aims to investigate how these variables serve as predictors of undergraduate students' academic achievement at the University of Ibadan, Nigeria.

Research Questions

Based on the problems identified, the study provided answers to the following research questions:

1. What is the level of AI usage among undergraduate students at the University of Ibadan?
2. What is the relationship among Artificial Intelligence, environmental factors, usage, study habits and University of Ibadan undergraduate students' academic achievement?
3. What is the composite contribution of artificial intelligence, environmental factors and study habits in the prediction of University of Ibadan undergraduate students' academic achievement?
4. What are the relative contributions of artificial intelligence, environmental factors and study habits in the prediction of University of Ibadan undergraduate students' academic achievement?

Methodology

Design and Sample Participants

The study is an ex-post facto design of survey research type. The design was considered because it allows the collection of data after the fact about the issue of interest to the researcher, as it occurred. The population of the study comprised undergraduate students in the University of Ibadan and ethical approval was sought and granted for the study. A multi-stage sampling procedure was adopted in the selection of the sample for the study. The University of Ibadan has been clustered into 17 faculties that run different programmes. A simple random sampling technique was used to select six (06) faculties for the study (three faculties from Arts/Humanities-based and three others from the Science-based faculties). In each of the selected faculties, two (02) departments were randomly selected and 25 undergraduate students from the 400 level were selected through simple random sampling from each selected department. The choice of 400-level undergraduate students was because the undergraduate students sat for GES 301 examination, which was a compulsory course for all 300-level students in the university, while they were in the first semester of the previous academic session (2023/2024 session), and through ethical consideration, their results were available for research while they were in their 400-level academic session (2024/2025 session). In all, a total of 300 undergraduate students from six (06) faculties and 12 departments participated in the study.

Instrumentation and Data Analysis

Three instruments guided the study, namely: Artificial Intelligence Usage, Environmental Factors and Study Habits Questionnaire (AIUEFSHQ), which elicits responses on four constructs: Artificial Intelligence Usage (AI Usage = 9 items), Environmental Factors (EF = 10 items), Study Habits (SH = 10 items), and Academic Achievement Target (AAT = 7 items). The second instrument was the Environmental Factors Inventory (EFI = 25 items), designed to collect data on the environmental conditions that surround and influence undergraduate students' academic achievement in the University of Ibadan. While the third instrument was Undergraduate Students' Achievement Score Sheets in GES 301 examination (USASS – GES 301), designed to collect data on selected undergraduate students' Matriculation Number, Faculty, Department and Achievement Scores in GES 301 = 300 items each. A validation exercise was conducted on a 30-similar undergraduate student sample after necessary corrections had been made. The reliability coefficients were established on the instruments using Cronbach Alpha, and their resulting reliability coefficients were 0.89 for AIUEFSHQ and 0.76 for EFI, respectively. Data collected were analysed using descriptive statistics (percentage and frequency count), Pearson product-moment correlation, and multiple regression.

Results and Discussions

The results are presented and discussed with respect to the research questions stated.

Research Question One: What is the level of AI usage among undergraduate students at the University of Ibadan?

Table 1: Level of AI Usage among Undergraduate students

AI Usage Items	Very Unlike Me	Unlike Me	Like Me	Much Like Me	Very Much Like Me
I believe that Artificial Intelligence tools support learning.	5 (2%)	6 (2%)	40 (13%)	77 (26%)	172 (57%)
I frequently use AI-powered tools (e.g., Grammarly, ChatGPT, Quillbot).	4 (1%)	8 (3%)	49 (16%)	100 (34%)	139 (46%)
AI tools help me improve the quality of my assignments.	4 (2%)	6 (2%)	63 (21%)	97 (32%)	130 (43%)
AI tools help me improve the quality of my research.	4 (2%)	11 (4%)	67 (22%)	91 (30%)	127 (42%)
I find AI tools easy and convenient to use.	5 (2%)	7 (2%)	59 (20%)	85 (28%)	144 (48%)
AI tools help me manage my study time effectively.	5 (2%)	14 (4%)	77 (26%)	84 (28%)	120 (40%)
I am confident in using AI tools for academic purposes.	4 (2%)	10 (3%)	76 (25%)	86 (29%)	124 (41%)
My academic performance has improved since I started using AI tools.	6 (2%)	24 (8%)	78 (26%)	77 (26%)	115 (38%)
I find it difficult to use AI tools for my studies	120 (40%)	143 (47%)	17 (6%)	14 (5%)	6 (2%)
Weighted Mean = 3.86					

Table 1 reveals the level of AI usage among undergraduate students at the University of Ibadan. The result was discussed using the average of the response format to interpret the findings in such that the benchmark is taken and determined as 3.0. It is observed that the means of eight out of nine items are greater compared to the predetermined benchmark (3.0). This implies that undergraduate students of the University of Ibadan are deploying artificial intelligence for productive academic tasks. For instance, on the items which stated that “I believe that Artificial Intelligence tools support learning” ($\bar{x} = 4.35$). “I frequently use AI-powered tools” (e.g., Grammarly, ChatGPT, Quillbot ($\bar{x} = 4.21$)). Similarly, “AI tools help me improve the quality of my assignments” ($\bar{x} = 4.14$). “AI tools help me improve the quality of my research” ($\bar{x} = 4.09$). Furthermore, on the item which

stated that “I find AI tools easy and convenient to use” ($\bar{x} = 4.19$). “AI tools help me manage my study time effectively” ($\bar{x} = 4.00$). I am confident in using AI tools for academic purposes ($\bar{x} = 4.05$). Lastly, my academic performance has improved since I started using AI tools ($\bar{x} = 3.90$). Deducing from the findings, it is observed that eight out of nine items used to measure the level of AI usage among undergraduate students had a mean greater than the predetermined benchmark (3.0) and the coefficient of weighted mean (3.86), which is greater than the benchmark (3.0) predetermined also confirm that undergraduate students of the University of Ibadan are deploying artificial intelligence for productive academic task.

Research Question Two: What is the relationship among Artificial Intelligence, environmental factors, usage, study habits and University of Ibadan undergraduate students’ academic achievement?

Table 2: Correlation Matrix of Artificial Intelligence, Environmental Factors Usage, Study Habits and University of Ibadan Undergraduate Students’ Academic Achievement

Variables	AI	EFU	SH	UUA
Artificial Intelligence	1			
Environmental Factors Usage	0.442**	1		
Study Habits	0.390**	0.419**	1	
University of Ibadan Undergraduate Academic Achievement	0.119**	0.143**	0.206**	1

Significant @ $p < 0.05$.

The result from Table 2 shows the relationship among Artificial Intelligence, environmental factors usage, study habits and University of Ibadan undergraduate students’ academic achievement. From Table 2, there is a significant moderate positive correlation between Artificial Intelligence and University of Ibadan undergraduate students’ academic achievement, $r = 0.119$, (0.039) , $P < 0.05$. Moreover, there is a significant correlation between environmental factors Usage and University of Ibadan undergraduate students’ academic achievement, $r = 0.143$, (0.013) , $P < 0.05$. In addition, there is a significant moderate positive correlation between study habits and University of Ibadan undergraduate students’ academic achievement, $r = 0.206$, (0.000) , $P < 0.05$. The result implies that there is a significant relationship among artificial intelligence, environmental factors usage, study habits and University of Ibadan undergraduate academic students’ achievement.

Research Question Three: What is the composite contribution of artificial intelligence, environmental factors and study habits in the prediction of University of Ibadan undergraduate students’ academic achievement?

Table 3: Regression Summary and ANOVA of Artificial Intelligence Usage, Environmental Factor and Study Habits in the Prediction of Undergraduate Students' Academic Achievement

Multiple R = 0.394, R Square = 0.155, Adjusted R Square = 0.147, SE = 0.859					
Source of Variance	SS	Df	M	F	Sig.
Regression	40.110	3	13.370		
Residual	218.460	296	0.738	18.12	0.000
Total	258.570	299			

Significant at $p < 0.05$. $n = 300$

Result in table 3 indicates that there is a significant composite contribution of artificial intelligence usage, environmental factors and study habits in the prediction of the University of Ibadan undergraduate students' academic achievement ($F_{(3, 296)} = 18.12$; $R = 0.394$, $R^2 = 0.155$; $p < 0.05$). This implies that when artificial intelligence usage, environmental factors and study habits are taken together, the variables jointly relate with undergraduate students' academic achievement in university of Ibadan. Table 3 further reveals a multiple regression adjusted $R^2 = (0.147)$. This shows that independent variables: artificial intelligence usage, environmental factors and study habits accounted for 15% of the variance observed in undergraduate students' academic achievement in the University of Ibadan, while the remaining 85% may be due to other factors and residuals not investigated in the study. The findings imply that there is a significant composite contribution of artificial intelligence usage, environmental factors and study habits in the prediction of University of Ibadan undergraduate students' academic achievement.

Research Question Four: What are the relative contributions of artificial intelligence, environmental factors and study habits in the prediction of University of Ibadan undergraduate students' academic achievement?

Table 4: Relative Contributions of Artificial Intelligence Usage, Environmental Factors and Study Habits in the Prediction of Undergraduate Students' Academic Achievement

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	S.E	Beta		
(Constant)	1.617	0.369		4.386	0.000
Artificial Intelligence Usage	0.045	0.009	0.306	4.967	0.000
Environmental Factors	0.016	0.011	0.091	1.458	0.146
Study Habits	0.010	0.09	0.074	1.220	0.224

Significant at $p < 0.05$. $n = 300$

Similarly, the results in Table 4 indicate that there were significant relative contributions of the independent variables: artificial intelligence, environmental factors and study habits on undergraduate students' academic achievement in the University of Ibadan. For instance, artificial intelligence usage ($\beta = 0.306$; $t = 4.967$; $p < 0.05$) contributed significantly to undergraduate students' academic achievement at the University of Ibadan. However, environmental factors ($\beta = 0.091$; $t = 1.458$; $p > 0.05$) relate positively but did not contribute significantly to undergraduate students' academic achievement at the University of Ibadan. Also, study habits ($\beta = 0.074$; $t = 1.220$; $p > 0.05$) relate positively but did not contribute significantly to undergraduate students' academic achievement at the University of Ibadan.

Discussion

Results from this study reveal a significant relationship between artificial intelligence usage and undergraduate students' academic achievement at the University of Ibadan. The results appear so because of the importance of ICTs in facilitating learning and giving opportunities to access more educational materials. The finding aligns with some authors and researchers, for instance, the finding supports Abulibdeh, Elshaer, & Qureshi (2024) and Villegas-Ch, Palacios-Pacheco, & Luján-Mora (2020), who asserted that Artificial Intelligence (AI) has emerged as a transformative technology with the potential to revolutionise various aspects of society, including education (Abulibdeh, Elshaer, & Qureshi, 2024); Villegas-Ch, Palacios-Pacheco, & Luján-Mora, 2020) and Ajani, Akinyemi & Adedoyin, 2022). Similarly, the findings support studies by Zhai Chu & Wang (2021); Akpomi, Ogar, & Umoh. (2022), Abulibdeh, Elshaer, & Qureshi (2024), who submit that through research have established that Artificial Intelligence (AI) has the potential to address some of the major challenges facing our educational institutions today, which can be reduced minimally, thereby facilitating innovative teaching and learning practices to accelerate progress towards achieving SDG Goals in Nigeria if properly implemented.

Results also reveal a significant relationship between environmental factors and undergraduate academic achievement at the University of Ibadan and support Miravet, Ciges & García (2024), who asserted that the learning environment should promote sensory comfort and high auditory and visual activity. The physical layout of such an environment should accommodate scheduled activities, allow for people's sense of personal space and promote desirable patterns of social interaction and communication, as well as psychological comfort and stability. According to Osei-Himah, Parker & Naah (2022) and Fazal, Sarwar, Nargiza, Khan & Qi (2023), an effective classroom is attributable to its physical appearance or layout because it produces a task-oriented atmosphere and, at the same time, it encourages social and emotional needs of the students (Oriafor, 2020).

Results further revealed a significant relationship between study habits and undergraduate students' academic achievement at the University of Ibadan. It appears in this manner because of the level at which students' study and provides them with the opportunity to discover new ideas. The finding is in line with Alavi, Lesani & Mahdavinia (2024) who

asserted that study habits make students manifest different experiences regardless of gender, which in turn affects changes in their behavior, their motivational levels, growth of mental, physical, interpretive skills, as well as values and beliefs (Alavi et al, 2024).

Conclusion and Recommendations

Artificial Intelligence usage has gained relevance as one of the emerging technologies that brings about effectiveness and transformative innovation in the teaching-learning process of undergraduate students' achievement at the University of Ibadan. Also, the structured learning environment with adequate and functional instructional materials, with the consistent study habits practiced and strategies deployed by the undergraduate students, significantly influences their academic achievement in the University of Ibadan. The findings of this research necessitate further investigation into the determinants of undergraduate academic achievement. Based on the findings of the study, the study recommends the following to key stakeholders as follows:

- i. The university should develop clear Artificial Intelligence (AI) usage policies (permitted tools, usage percentages, academic integrity guidelines) for productive, academic tasks.
- ii. The university should create enabling environments that will improve infrastructure (power, internet, devices) for optimum learning.
- iii. The university should integrate AI literacy into the curriculum through training.
- iv. Lecturers should be encouraged to guide students on the productive use of AI and its associated challenges.
- v. Lecturers should design teaching-learning assessments that will encourage critical thinking over AI dependence.
- vi. Undergraduate students should be guided to use AI as an enhancement tool, not a replacement for thinking.
- vii. Undergraduate students should develop complementary skills (critical analysis, creativity, communication) for productive, academic tasks.

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