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Effects of Artificial Intelligence on Academic Development of University Students: Evidence from Lagos State University

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Abstract

This study examined the effects of Artificial Intelligence (AI) on the academic development of university students, specifically on students' learning experience, academic achievement, self-confidence, social interactions, and associated challenges. A descriptive survey research design guided by Technological Determinism Theory was employed to survey 100 library-using students across different academic levels in Lagos State University, Nigeria. Findings revealed that AI positively impacts learning experiences, particularly through customised information resources and practical examples. AI has a strong positive influence on students' academic achievement, with 63% of respondents indicating that AI-assisted tools helped identify and address weaknesses, suggesting effective diagnostic support for academic improvement. 77% of the students agreed that AI improved their ability to think positively and independently, indicating a strong perceived effect of AI on self-confidence. AI had a moderate, positive effect on students' social interaction (mean= 2.81), which was lower than other factors, indicating that while AI supports collaborative and interactive learning, its social impact is less pronounced than other academic outcomes. Key challenges identified include: Information inaccuracies, high cost of data, data security, privacy concerns, and fear of overdependence. The study recommends expanded digital libraries, digital literacy training, and development and enforcement of AI policies for responsible and effective academic use.

Keywords: Academic Achievement, Academic Development, Artificial Intelligence, Learning Experience, Self-Confidence, Social Interactions, University Students.

Introduction

Artificial intelligence (AI) is a rapidly developing technology with numerous benefits for its users. This field of technology enables computer systems, applications, and devices to copy and successfully replicate a wide range of human abilities. These abilities include, but are not limited to, reasoning, learning from experience, recognizing and interpreting objects or patterns, understanding and processing natural human language, independent decision-making, creativity, solving complex problems, and generating original ideas or content.

The concept of artificial intelligence has been successfully integrated into many aspects of life, including education. AI is swiftly renovating teaching and learning practices by providing tools for curriculum development, audio-visual instruction, personalized learning, virtual assistance, and administrative support (Apata, 2025). In academics, artificial intelligence has modified teaching techniques and transformed the learning process of students. Artificial intelligence is now used for curriculum development, customized learning, student engagement, data analysis and routine administrative tasks (Mallillin, 2024). In a study conducted by Mamman (2025) on the influence of artificial intelligence on university students in Kwara state, Nigeria, it was discovered that AI platforms contributed significantly to interactions between students and their lecturers and also increased student participation in virtual discussion groups. Regardless of these advantages, the effects of AI in academic environments seem to be multifaceted.

Capinding & Dumayas (2024) expressed concerns about the potential negative implications of artificial intelligence (AI) on students' overall learning development. They noted that while AI tools can increase access to information and organize academic tasks, excessive dependence on AI may weaken students' critical thinking and problem-solving abilities. The abundance of AI-generated content also raises concerns about information accuracy and credibility, as students may struggle to discern between authentic and misleading sources. In the same vein, Mathew & Adizi (2025) described artificial intelligence as a platform that provides a wide range of beneficial tools to students and instructors for improved teaching, learning, and research through instant access to information and efficient completion of tasks, but also has the potential to weaken essential educational principles such as academic integrity, creativity, originality, and socialization. The convenience of AI-driven learning platforms could reduce students' motivation for hands-on learning, creativity, and peer-instructor collaboration, thereby affecting socialization and practical skill acquisition, which are essential to holistic education.

While existing literature extensively covers the general advantages and disadvantages of AI in academic settings, including its impact on learning practices, academic integrity, and critical thinking, there is a recognized need for more comprehensive empirical investigations into its specific effects on the holistic academic development of university students. Specifically, a gap exists in understanding how the integration of AI tools

collectively influences students' learning experience, their academic achievement, their self-confidence in academic pursuits, and their social interactions within the university environment.

This study therefore, examines the effects of artificial intelligence on the academic development of university students. The study considered critical factors that contribute to the overall academic development of university students who incorporate artificial intelligence into their academic activities. These factors include, but are not limited to: students' learning experience, academic achievement, self-confidence, and social interactions.

Research Questions

The following research questions were raised to guide this study.

1. What is the effect of artificial intelligence on university students' learning experience?
2. How does artificial intelligence affect university students' academic achievement?
3. What is the effect of artificial intelligence on university students' self-confidence?
4. How does artificial intelligence affect university students' social interactions?
5. What are the major challenges encountered by university students while using artificial intelligence?

Review of Literature

Use of Artificial Intelligence by University Students

Artificial intelligence is reshaping how university students learn, interact, and develop academic and professional skills. University students worldwide increasingly rely on AI for academic tasks, including essay writing, research summarization, and problem-solving. A systematic literature review of AI in education found that 43% of U.S. college students regularly use such tools, and that half of instructors incorporate AI into course development (Chukwuere, 2024). A systematic review of this subject by Crompton and Burke (2023) describes five general usage categories of AI in higher education, namely: assessment/evaluation, prediction, AI assistants, intelligent tutoring systems, and managing student learning. An exploratory qualitative study of undergraduates in a U.S. sustainability course found that students adopt AI primarily for brainstorming ideas and refining drafts, viewing it as a collaborative partner rather than a replacement for human effort (Matto & Ponera, 2025). Similarly, in a survey of over 1,000 students, it was discovered that 95.6% engage with AI weekly, with virtual assistants (88.2%) and educational platforms (42.4%) being the most common tools (Ofosu-Ampong et al., 2024). University students widely use AI tools such as intelligent tutoring systems, virtual assistants, chatbots, and generative AI (e.g., ChatGPT, Grok, Gemini) for academic support, research, writing, and time management. AI fosters students' skill-building abilities through personalised feedback, but it can gradually reduce critical thinking skills as AI's instant responses may discourage deep mental engagement (Apata, 2025). Frequent AI use is positively correlated with improved academic performance, engagement, and self-regulated learning, though the quality of tools used and

students' digital literacy skills affect these effects (Crompton & Burke, 2023). AI is also leveraged to develop soft skills (collaboration, communication, and critical thinking), though its impact on creativity is not clearly defined (Hasan et al., 2025; Wang et al., 2022). Undergraduate law students at Ahmadu Bello University rated ChatGPT highly for ease of use in legal analysis (Bello et al., 2025), while biology students at the University of Nigeria applied AI for concept clarification (Ezeanya et al., 2025). A comprehensive analysis using Nigerian undergraduate students found positive attitudes toward ChatGPT as a reference tool, though 48.2% cited accuracy concerns (Apata, 2025).

In learning environments with limited infrastructure, AI driven platforms facilitate distance learning, improve teaching efficiency, and ensure accessibility of course content, which is critical for most Nigerian students in overcrowded classrooms (Bello et al., 2025). This feature has positive effects on learning, with 55% of AI users expressing significant improvements (Sevnarayan, 2024). AI platforms have also been proven to provide seamless research and administrative support through chatbots, thereby improving thesis quality, reducing errors, and eliminating bureaucratic delays. For African students, it enhances research in under-resourced environments, with 42 responses in one study highlighting time savings (Apata, 2025). AI adoption in African higher education offers benefits like improved productivity and equity, though ethical implications must be managed (Segbenya et al., 2024). Bond et al. (2024) noted that students who are confident in navigating AI platforms use these tools frequently for academic purposes, with caution about their potential risks.

Despite its numerous advantages, Artificial Intelligence can hinder intellectual and academic growth if not properly handled. Schoeffer et al. (2023) emphasized that while human dependence on AI recommendations is essential for making accurate decisions, both excessive and insufficient reliance can harm decision accuracy. Matthew and Issac (2025) described AI as a double-edged phenomenon in Nigeria's epileptic education system with great consequences on the quality of education in the country. Some threats associated with the use of AI include:

- Overdependence and skill loss: Excessive dependence on AI platforms, especially generative AI for routine tasks may reduce critical thinking and independent effort. A systematic review by Matto & Ponera, (2025) revealed that continual use of generative AI may result in cognitive offloading, a mental situation in which students avoid deep thinking and psychological processing, potentially lowering long-term academic achievement.
- Misinformation and Disinformation: misinformation refers to inaccurate information, such as wrong dates, citations, statistics, or translations, accidentally generated by AI, while Disinformation is a deliberate act of fabricating or manipulating information in an AI's database to meet a user's information needs. These types of information are usually peddled by AI systems, as indicated by Apata (2025), who stated that AI propagates errors or biases, with 60 responses in a global study citing information inaccuracies as a major problem. This threat is further amplified in Africa, where data

scarcity often leads to hallucinations or falsification of data in research outputs, undermining trust and comprehension of the study (Adarkwah, et al., 2023). Most AI technologies are developed in Western architypes often exclude African epistemologies, raising concerns about cultural bias and digital colonialism (Maimela & Mbonde, 2025).

- Ethical and Social Concerns: Issues around academic dishonesty, including plagiarism through AI-generated content, poor referencing and citation, as well as reduced peer-to-peer interaction, affect social and collaboration skills. According to Mlambo (2024), South African lecturers perceived mixed impacts on the use of ChatGPT in academics, with the majority of them highlighting negative effects on students' interpersonal learning skills.

Regarding academic development, AI's dual role is evident. Oladokun (2024) noted that AI accelerates knowledge acquisition (82.4% positive perception) but has the potential of stunting holistic growth if not balanced with guided use. In African settings, AI has the potential to transform the education system to ensure equal access to quality and improved learning outcomes; however, inconsistent AI integration may aggravate the educational and digital divide (Matto, 2024). AI can perpetuate structural inequalities, widen the digital divide, and create privacy concerns, particularly in under-resourced environments (Isaacs, 2025).

Challenges Associated with the Use of Artificial Intelligence

Nigerian university students face significant challenges in integrating AI into academic activities, which poses a risk of marginalization in this global AI era. Some of these challenges include, but are not limited to the following:

- Inadequate integration and guiding policies: the absence of a clearly defined national policy and frameworks guiding the use of AI has resulted in abuse of AI generated contented and promoted misinformation.
- Costs: All AI platforms and technologies require constant internet access which is expensive in Nigeria. In addition to the difficult economic conditions in the country, the high cost of data significantly reduces those who have access to artificial intelligence. The high cost of up-to-date hardware which will be compatible with new AI technologies also limits the adoption and use of artificial intelligence by students and institutions.
- Infrastructural shortages: inconsistent power supply, unreliable internet, outdated gadgets, ill-equipped and scarce digital centres are the norm in Nigeria which affects rural and less privileged students.
- Shortage of technical personnel: insufficient AI specialists and poor integration of AI into the curriculum limits the knowledge of university students and creates a capacity gap.

- Ethical issues: information accuracy, AI bias, academic integrity, data privacy, copyright abuse, data security, misinformation, and misuse of generative artificial intelligence are matters of concern associated with the use of AI.
- Human factors: resistance to change, unwillingness to adopt new styles of learning, are significant challenges that affect the use of new technologies and AI for academic activities.
- Inadequate technical skills: user interface difficulties, inability to navigate AI platforms due to lack of exposure or training also limit the use of AI.

These challenges reflect the economic and technological state of Nigeria and raise important questions on the reliability of AI-driven platforms as well as the feasibility of continuous AI use in the coming years if these challenges are not addressed.

Academic Development of Nigerian Students

Academic development among Nigerian students is shaped by a complex interplay of personal, social, institutional, and technological factors. Key determinants of academic development are:

1. Personal and psychological factors: these include self-esteem, motivation, study habits, and acknowledgement patterns, which are consistently linked to academic achievement (Kumo et al., 2025). Regardless of gender, high self-esteem and motivation forecast better personal outcomes, while age can influence self-esteem levels (Baba & GarbaKolo, 2021). Adewoye, (2025) noted that personal self-control and effective study habits are associated with higher achievements, whereas external acknowledgement and poor study habits predict lower performance. Olayiwonuola et al., (2025) observed that anxiety, especially cognitive anxiety, negatively impacts academic results, highlighting the need for mental health support among students.
2. Family and socio-economic background: Parents' education, socioeconomic status, and home environment significantly affect students' academic achievement (Rintep & Akoji, 2025). Similarly, Adeyemi & Adeyemi, (2014) noted that low parental income and limited educational support at home hinder access to quality education and academic success, especially in underserved communities. Family background, including parental support and occupation, is a strong predictor of student performance (Nwanwukwu & Asiyai, 2024, Adigun et al., 2025).
3. Institutional factors: a school's learning environment, teachers' skills, and classroom management techniques are critical for academic development (Mohammed et al., 2023). Conducive environments and well-trained teachers enhance academic achievement, while poor facilities and overcrowding impede progress (Kpurunee et al., 2025). School-based factors such as up-to-date infrastructure and teaching resources are top priorities for improving academic achievement in less developed countries like Nigeria (Barma et al., 2025).

4. Social factors: According to Akporuarho et al., (2024), age is an indicator of cognitive maturity and a significant predictor of academic performance. Gender and socioeconomic status may have less impact in institutions with adequate equity measures. Peer pressure and social control also influence achievement, with motivation emerging as a particularly strong predictor (Baba & GarbaKolo, 2021; Adigun et al., 2025).
5. Technological and pedagogical innovations: technological advancements in education enhance learning, comprehension, and engagement, but require proper training and ethical guidelines (Ngonso et al., 2025; Perculiar et al., 2025). Digital literacy, guided use of artificial intelligence, and stable reading habits have been shown to correlate positively with academic achievement, while excessive use of social media is detrimental to achieving academic goals (Nwagwu, 2025).
6. Faith-based and community influence: Taiwo & Enamudu, (2025) discovered that faith-based cognitive development often encourages discipline and resilience in students, which contributes to academic excellence, but may sometimes restrict intellectual freedom. Community influences, such as role models and infrastructural landmarks, also play a significant role in shaping educational outcomes (Rintep & Akoji, 2025).

Based on the factors above, it seems that academic development is multifaceted, requiring coordinated efforts from families, schools, communities, and policymakers.

This study was guided by the Technological Determinism Theory, which posits that once technology is introduced, it determines the course of social and educational change, often in unintended and uncontrollable ways (Mcluhan, 1962). This theory highlights the potential for artificial intelligence to reshape the educational landscape in ways that may not align with human needs, values, and ethical standards. AI systems designed primarily by large tech companies often prioritize efficiency, scalability, and profitability over the development of meaningful, human-centred educational experiences

Methods

The study adopted a descriptive survey research design to examine the effects of artificial intelligence on university students' academic development. The design was considered appropriate because it enabled the researcher to systematically collect quantitative data and describe students' perceptions of AI within their natural academic environment. The approach also allowed for descriptive comparison of responses across selected demographic variables.

The study population comprised students of Lagos State University. Although the university has a total student population of over 5,000, the university library accommodates approximately 500 users, with an additional 100 users in the e-library section, where internet access and electronic databases facilitate the use of AI-based tools.

A purposive sampling technique was employed to select students who actively use the university library and have practical exposure to AI tools. This sampling approach was

considered appropriate because it ensured that only students with relevant experience in AI usage were included in the study. A total of 100 library-using students participated in the survey. The sample size was considered adequate for generating descriptive insights within the scope of the study.

Data were collected using a structured questionnaire adapted from Capinding (2024). The instrument was designed to capture multiple dimensions of AI's effects on students' academic development. The questionnaire consisted of items measured on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. The instrument was reviewed by experts in the university library for content and face validity before administration.

Data were collected over two weeks. Participation was entirely voluntary, and respondents were assured of anonymity and confidentiality. Completed questionnaires were retrieved immediately after completion to ensure a high response rate.

Collected data were organized and analysed using descriptive statistical techniques, including frequency counts, percentages, mean scores, and standard deviations.

Results

Section A: Demography of Respondents

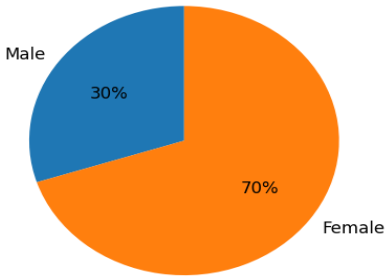


Figure 1: Gender distribution of respondents.

The gender distribution of respondents indicates a higher participation of female students in the study, which reflects a higher female-to-male ratio at Lagos State University.

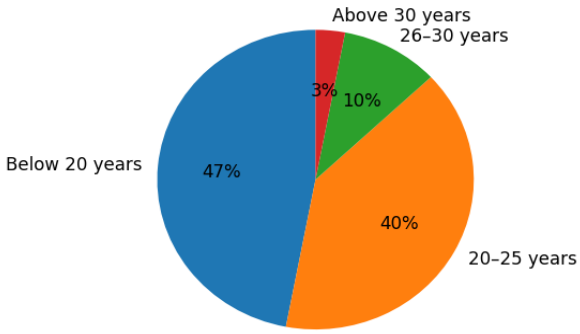


Figure 2: Age group distribution of respondents

The majority of the respondents in this study were below 20 years (47%). Students aged 20 – 25 years accounted for 40% of the sample size, those between 26 – 30 years constituted 10%, while students over 30 years formed the smallest portion at 3%.

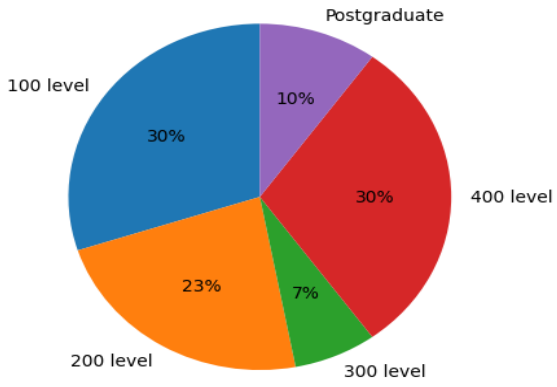


Figure 3: Level of study distribution of respondents

Based on the level of study, 100- level and 400-level students accounted for 30% of the respondents, followed by 200-level students at 23%, postgraduate students at 10%, and 300-level students at 7%. This distribution indicates a broad representation of students across different levels, enhancing the diversity of perspectives captured in this study.

Section B

Research question 1: Effect of artificial intelligence on university students' learning experience.

Table 1: AI and students' learning experience

Learning experience	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std Dev.	Interpretation
AI has improved my learning experience via customized information resources & tools.	50%	50%	0%	0%	3.50	0.50	Strongly Agree
AI has aided my learning style and speed, making it more pleasurable & efficient.	47%	53%	0%	0%	3.47	0.50	Strongly Agree
AI has promoted my critical thinking and problem-solving abilities.	40%	47%	10%	3%	3.24	0.79	Agree
AI has offered practical examples and case studies to enrich my learning experience.	50%	47%	3%	0%	3.47	0.56	Strongly Agree
Average Mean / Std Dev.					**3.42**	**0.59**	**Strong Agreement**

Mean scores ≥ 3.25 indicate Strong Agreement, while 2.50 – 3.24 indicate Agreement.

As indicated in Table 1 above, artificial intelligence has a strong effect on the learning experience of university students. The majority of respondents agreed strongly with the benefits of AI in their academics, such as customized information resources and practical examples for learning.

Research question 2: Effect of artificial intelligence on university students' academic achievement.

Table 2: AI and students' academic achievement

Academic achievement	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std Dev.	Interpretation
AI-powered tools have assisted me in pinpointing and tackling weaknesses in particular subjects.	30%	63%	7%	0%	3.23	0.56	Agree
AI-based feedback has assisted in enhancing the quality of my assignments.	47%	43%	7%	3%	3.34	0.74	Strongly Agree
AI has supported me in reaching my learning objectives.	37%	56%	7%	0%	3.30	0.59	Strongly Agree
AI has aided me in preparing for exams more efficiently.	40%	53%	7%	0%	3.33	0.60	Strongly Agree
Average mean/ Std Dev.					**3.30**	**0.62**	**Strong Agreement**

Mean scores ≥ 3.25 indicate Strong Agreement, while 2.50 – 3.24 indicate Agreement.

Table 2 above with the average mean score of 3.30 and low standard deviation, indicates a strong level of agreement by students that AI-powered tools positively affect academic achievement, especially in improving assignment quality, exam preparation, and identifying learning gaps.

Research question 3: Effect of artificial intelligence on university students' self-confidence.

Table 3: AI and students' self-confidence

Self confidence	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std Dev.	Interpretation
AI has fostered self-directed learning and exploration beyond the curriculum.	27%	60%	13%	0%	3.14	0.64	Agree
AI-powered tools have enhanced my ability to think positively and independently solve problems.	20%	77%	3%	0%	3.17	0.46	Agree

Self confidence	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std Dev.	Interpretation
AI has boosted my confidence and self-reliance in academic endeavors.	17%	73%	10%	0%	3.07	0.57	Agree
AI has supported me in developing self-discipline and accountability in my studies.	23.3%	53.3%	20%	3.3%	2.97	0.76	Agree
Average mean/ Std Dev.					**3.09**	**0.61**	**Agreement**

Mean scores ≥ 3.25 indicate Strong Agreement, while 2.50 – 3.24 indicate Agreement

The average mean score of 3.09 in Table 3, indicates a general level of agreement that AI contributes positively to students' self-confidence, particularly in promoting self-directed learning, independent problem-solving, and academic self-reliance. However, perceptions of AI's role in developing self-discipline and accountability are low.

Research question 4: Effect of artificial intelligence on university students' social interactions.

Table 4: AI and students' social interactions

Social Interaction	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std Dev.	Interpretation
AI has promoted peer-to-peer learning and academic assistance.	23.3%	53.3%	23.3%	0%	3.00	0.69	Agree
AI platforms have allowed for online debates and information exchange.	13%	63.3%	20%	3.3%	2.86	0.66	Agree
AI has connected me to a varied group of learners, broadening my social circle.	3.3%	56.7%	36.7%	3.3%	2.60	0.62	Agree
AI systems have facilitated inclusive and polite interactions in virtual learning settings.	6.7%	66.7%	23.3%	3.3%	2.77	0.64	Agree
Average Mean / Std Dev.					**2.81**	**0.65**	**Agree**

Mean scores ≥ 3.25 indicate Strong Agreement, while 2.50 – 3.24 indicate Agreement

Table 4 with the average mean score of 2.81 indicates a general agreement that AI enhances students' interactions, especially in facilitating peer-to-peer learning, and academic assistance.
Research question 5: Challenges encountered while using artificial intelligence

Table 5: Challenges of AI

Challenges	Strongly Agree	Agree	Disagree	Strongly Disagree	Mean	Std Dev.	Interpretation
Information inaccuracy	36.7%	46.7%	16.67%	0%	3.20	0.71	Agree
Data security	26.7%	47%	23%	3.3%	2.97	0.78	Agree
Cost of data	43.3%	33.3%	16.7%	6.7%	3.13	0.93	Agree
User interface difficulties	26.7%	36.7%	30%	6.7%	2.83	0.93	Agree
Data privacy concerns	23.3.%	50%	20%	6.7%	2.90	0.83	Agree
Fear of overdependence	40%	36.7%	16.6%	6.7%	3.10	0.93	Agree
Information overload	20%	50%	20%	10%	2.80	0.87	Agree
Average Mean / Std Dev.					**2.99**	**0.85**	**Agree**

Mean scores ≥ 3.25 indicate Strong Agreement, while 2.50 – 3.24 indicate Agreement

As indicated in Table 5, the average mean score of 2.99 indicates a general agreement that students face significant challenges, especially in terms of information inaccuracy, the cost of data, and the fear of overdependence.

Discussion of Findings

The findings of this study indicate a strong positive perception of artificial intelligence with regards to students' learning experience, with an overall mean score of 3.42. While this generally suggests that students perceive AI as a beneficial tool to their academic development, a deeper look reveals important distinctions. The strongest areas of agreement were related to AI's ability to provide customized information resources and enhance learning speed and efficiency. This pattern suggests that students appreciate AI for its functional advantages, in terms of personalization, accessibility, and time-saving capacity. However, the comparatively lower mean score recorded for AI's role in promoting critical thinking and problem-solving (M = 3.24) as shown in Table 1 identifies a complex relationship. Although the average mean falls within the "Agree" category, the higher standard deviation for this item indicates varying perceptions among the respondents. This suggests that while students recognize AI as useful for information retrieval and efficiency, they are less certain about its positive contribution to their cognitive development. AI tools, especially generative systems, simplify academic tasks, but there have been scholarly concerns by Matto (2024), Mallillin (2024) as well as Mathew & Isaac (2025) about whether these tools improve intellectual engagement or unintentionally reduces mental strength and independent thinking capacity of students, and the findings of this study attest to this concern.

Most of the items considered under student's learning experience had positive responses which may indicate strong acceptance of AI within the sampled population or a reflect a novelty effect, where emerging technologies are viewed favourably due to their innovation appeal. Although, the purposive sampling of active library users who most likely possess greater academic motivation and technological exposure may have influenced the overwhelmingly positive responses.

Findings presented in Table 2 indicate that students generally perceive AI to have a strong positive influence on their academic achievement with an overall mean score of 3.30. this generally suggests that AI is beneficial to overall academic performance and meeting student's personal goals. The most rated feature under this consideration was 'enhancing quality of assignments' with the mean score of 3.4 showing that students frequently use AI tools for drafting, editing and structuring their academic work and the effects has been positive. The relatively high standard deviation for this feature however indicates different user experiences which raises ethical concerns on academic integrity, accuracy of information on AI platforms dependency and abuse of these platforms.

Students strongly agreed that AI supports them in reaching their learning objectives indicating that AI tools facilitate goal-oriented learning by enabling students to monitor progress and remain academically focused. Similarly, there was strong agreement to AI enhancing student's exam preparation, underscoring the usefulness of AI-driven platforms in organizing study materials, practicing assessment items, and reinforcing key concepts. The feature 'AI-powered tools have assisted me in pinpointing and tackling weaknesses in particular subjects' had the lowest mean score of 3.23 suggesting that while students recognize AI's role in identifying subject-specific weaknesses, this benefit is less strongly perceived compared to other features.

As shown in table 3, students generally agreed that AI tools support their self confidence with the average mean score of 3.09. The most rated statement under this consideration was 'enhancing ability to think positively and independently solve problems. This statement most likely had the highest agreement because students regard AI tools as reliable and are confident in them due to the abundance of accessible information on AI platforms and their efficiency in performing given tasks. This confidence in AI tools seems to have a direct effect on independent problem-solving and positive thinking. Students also agreed that AI has encouraged self directed learning and exploration beyond the curriculum, suggesting that AI encourages intellectual curiosity outside formal course requirements considering further suggestion features and customization settings available on most generative AI platforms. The statement "AI has boosted my confidence and self-reliance in academic endeavours" recorded a mean score of 3.07 (SD = 0.57), indicating that most students (73%) felt more confident and self-reliant academically when using AI tools. The lowest mean score was recorded on support in developing self discipline and academic accountability (2.97). Although students agreed AI supported the development of self-discipline and accountability in their studies, the relatively higher standard deviation indicates conflicting opinions and suggests a weak influence of AI on self-regulatory behaviours which can lead to abuse of these tools and raise concerns on academic integrity. Overall, the pattern of responses suggests that AI use is strongly associated with improved self-directed learning, problem-solving confidence, and academic self-reliance among the students surveyed.

The findings of the study, as presented in Table 4, indicate that artificial intelligence has a moderate but positive impact on students' social interaction with an average mean score of 2.81. More than half of the respondents (53%) agreed that AI promoted peer-to-peer learning

and academic assistance, suggesting that AI platforms encourage collaborative learning and mutual academic support among students to a moderate degree. Students generally agreed that AI platforms have allowed for online debates and information exchange and have also facilitated inclusive and polite interactions in virtual learning settings. The statement 'AI has connected me to a varied group of learners, broadening my social circle' had the least mean value of 2.60 suggesting that while AI tools support collaborative and interactive learning, its social impact is less pronounced than its influence on learning experience, academic achievement, and self-confidence. Overall, the average mean score of 2.81 with a standard deviation of 0.65 indicates general agreement among respondents regarding the role of artificial intelligence in enhancing social interaction. The relatively moderate mean value implies that while AI supports collaborative and interactive learning, its social impact is less pronounced than its influence on learning experience, academic achievement, and self-confidence. This moderate effect of AI on social interactions among students can be attributed to the solidary nature of AI mediated learning and independence traits that it fosters.

The findings presented in the table 5 indicate that students generally agreed that several challenges are associated with the use of artificial intelligence for academic activities. A majority of the respondents agreed that inaccuracies in AI-generated content are a significant challenge. This suggests that while AI is useful for learning, students do not trust the correctness of information obtained from AI platforms. This leads to concerns on academic integrity and trustworthiness of AI generated data. Similarly, concerns about the cost of data were strongly acknowledged by the respondents, indicating a heavy financial burden of internet access constitutes a significant barrier to the effective use of AI tools. This challenge largely reflects the difficult economic state of the country faced even by university students which limits their use of AI despite its positive contribution to academics. Data security and privacy concerns were also identified as notable challenges. Respondents agreed that issues related to data security and data privacy affect their use of AI tools. These findings reflect apprehension about the safety of personal and academic information when engaging with AI-based platforms. Furthermore, respondents agreed that fear of overdependence on AI constitutes a challenge although the relatively high standard deviation reflects varying opinions which may indicate that some students are not bothered (Mean = 3.10, SD = 0.93). User interface difficulties and information overload were also identified as challenges, indicating that some students experience difficulty navigating AI platforms and managing the volume of information provided. Overall, the results demonstrate that although artificial intelligence offers considerable benefits to students' learning experiences and academic performance, its adoption is accompanied by several challenges related to information inaccuracy, internet cost, data security, usability, and cognitive load.

The positive findings of this study, including enhanced personalized learning experiences, increased academic achievement, and strengthened self-confidence among students, reflect the technology-deterministic view that AI technologies are not just tools but active forces that restructure pedagogical processes and student engagement in higher education. While

technological determinism emphasizes technology's influential role, the challenges associated with these tools such as information inaccuracy, concerns over data security, and privacy underscore that technology's impacts are not completely autonomous or independent; users' perceptions and the environment in which it is used also affect the outcomes. The study's findings are therefore consistent with the premise that AI technologies have a significant influence on educational practices, but the degree of influence is also moderated by socio-institutional factors that frame how technology is accessed, regulated, and supported.

Conclusion

In conclusion, this study discovered that artificial intelligence has an overall positive effect on the academic development of university students, especially in students' learning experience, academic achievement, and self-confidence. Artificial intelligence affects social interactions moderately, while information inaccuracy and high cost of data are the most significant challenges. Based on these findings, the study highlights the need for increased institutional support through the provision of additional computer centres and digital libraries, the implementation of digital literacy training for both staff and students, and the development and enforcement of policies that promote the responsible and effective use of AI in academics.

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