EFFECT OF ARTIFICIAL INTELLIGENCE ON UNIVERSITY STUDENTS' ACADEMIC PERFOMANCE: A CASE OF GRETSA UNIVERSITY THIKA SUB-COUNTY, KIAMBU COUNTY, KENYA.

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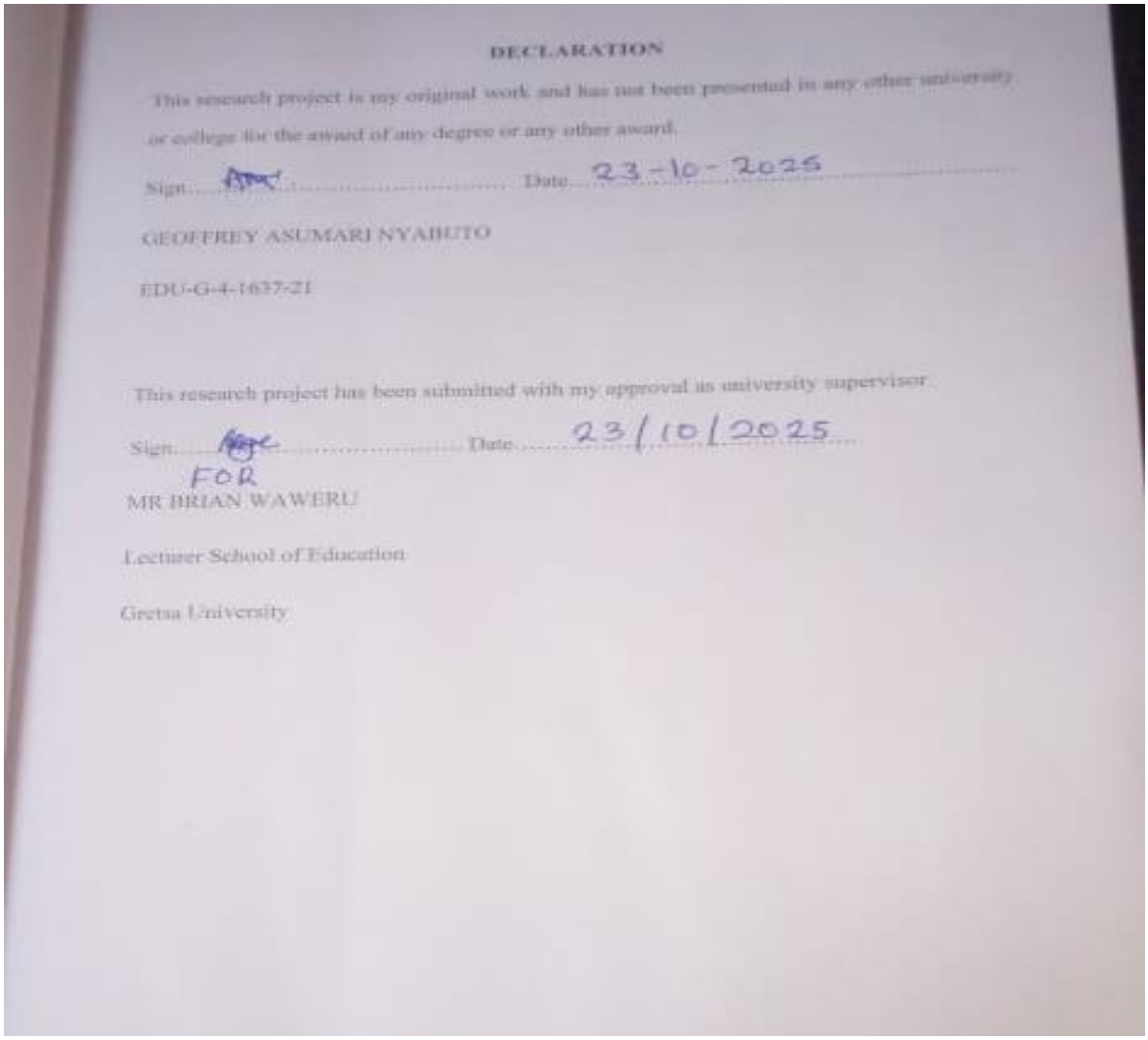
A RESEARCH PROJECT SUBMITTED TO SCHOOL OF EDUCATION HUMANITIES AND SOCIAL SCIENCES IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF BACHELOR OF EDUCATION (ARTS) OF GRETSA UNIVERSITY.

OCTOBER, 2025

DECLARATION



DECLARATION

This research project is my original work and has not been presented in any other university or college for the award of any degree or any other award.

Sign..... Date 23-10-2025

GEOFFREY ASUMARI NYABUTO

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This research project has been submitted with my approval as university supervisor

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ABBREVIATION AND ACRONYMS

AI Artificial Intelligence

LMS Learning Management Systems

ITS Intelligent Tutoring System

CBC Competency Based Curriculum

ABSTRACT

Academic performance and learning outcomes are being revolutionized by the introduction of Artificial Intelligence (AI) into higher education. This study aims at finding out possible advantages and difficulties of examining the complex effects of AI on academic achievement at universities. The study will be guided by the following objectives. To investigate how AI technology, affect students' participation, motivation, and engagement in their coursework. To identify and analyse the ethical concerns and psychological impacts associated with using AI in academic settings. To evaluate how AI tools, impact the efficiency of learning processes and administrative tasks in educational institutions. To assess how the use of AI affects students' development of critical thinking and problem-solving abilities. The study will be guided by augmented intelligence, connectivism and Zone of Proximal Development theories. The research instruments used are questionnaires. Content validity will be used to examine each questionnaire in turn and compare the content. To assure item reliability, the test-retest method will be used.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This section consists of the background of the study, problem statement, purpose of the study, research questions, objectives of the study, significance of the study, limitations of the study, and assumptions of the research study.

1.1 Background of the Study

Artificial intelligence (AI) is one of the concepts that have gained traction rapidly in the past few decades at the threshold of a sci-fi fantasy to a practical and applicable element of everyday life. Education is one of the domains that have recorded a lot of improvement in AI development (Feigerlova et al., 2025). Hundreds and thousands of researches have been carried out to identify the effect of artificial intelligence (AI) on practice among students due to the application of the technology in education (Luo et al., 2025). The paper examines history and current condition of artificial intelligence in the teaching field and the potential impact and implications of the emerging technology on academic achievement.

Whereas the merging of the technology in education as a way of learning access seemed to be of old age. Instructional tools have eventually evolved throughout the ages in the simplicity of technologies such as overhead projectors, and calculators into sophisticated e-learning platforms (Li et al., 2025). The transformation of education as a digital process started at the end of the 20th century, when personal computers and Internet became accessible in the classrooms. However, during the first half of 2020, the so-called artificial intelligence (AI) gained a significant momentum in the field of education as the emerging technologies of machine learning, natural language processing, and data analytics were launched (Guo et al., 2024).

Before that, AI was deployed in rudimentary applications, like automated grading systems and learning management systems (LMS), and simplified the process of instruction delivery and organization (Cingillioglu et al., 2024). With the development of AI technologies, they became more sophisticated and came to be featured with such capabilities as adaptive learning platforms, intelligent, and personal learning systems.

This belief group comes with a great variety of educational functions which are currently recommendable using AI and strive to enhance the effectiveness of learning and scholastic performance. An example of this is the adaptive learning systems that personalize the learning contents to suit individual students. Through analysing learner behaviour and performance data, these systems are able to adjust the level of difficulty of certain tasks, provide personalized feedback, and recommend resources based on particular as well as preferred learning and progress (Vieriu and Petrea, 2025). The other interesting AI application is the system of intelligent tutoring (ITS) that duplicates the personal tutoring experiences. These systems can clear up any questions a student may have and guide them by using the technology of natural language processing to simplify issues and offer assistance within a second (Adewale et al., 2024). According to studies, ITS tools have the potential to empower students to approach more complex tasks and increase their mastery of solving the tasks (Al-Mamary et al., 2024).

Educators can also experience increased efficiency in terms of the self-management of their workload owing to AI-driven plagiarism detectors and automated essay grading systems among others (Qadeer, 2025). These technologies encourage impartiality and uniformity in testing besides conserving time that teachers would have used up cycling repetitive processes. In addition, AI analytics have the potential to track trends in attendance, engagement, and academic performance to recognize the students who may not achieve good performance at a very young age.

The role of AI in education has a great effect on improved performance of students. Among them, the personalization of learning experiences is among the advantages that it delivers. Conventional learning experiences may make use of standardized learning models and techniques that might disadvantage certain students and make others feel bored (Khan et al., 2025). Students get specialized learning and support based on their particular needs and talents, which help them learn more actively and be motivated, promoted by means of AI-powered tailored learning tools. Besides, AI increases the level of interactiveness and enjoyment of the learning experience due to the introduction of gamification. In AI platforms, gamification is used to add elements of games to learning, making it fun, entertaining, and better learners are thereby engaged and perform better (Al-Mamary et al., 2024).

AI offers real-time help and evaluation. In contrast to traditional evaluation systems where feedback is usually given too late, AI systems could provide real-time assessment and instructions along with the student as he develops his work and help them correct mistakes/refine their insight in the moment (Qadeer, 2025).

Effective learning requires developing this prompt feedback that enables the students to identify their problems at a faster rate and rectify errors, which results in the enhanced learning of the topic. Nevertheless, AI has not entirely positive impact on the academic performance as it is subject to numerous factors (Khan et al., 2025). The success of AI in education is largely dependent on the quality of AI systems being employed, their integration into the learning program, and the degree of skills in educators who employ such systems. Also, other obstacles are the presence of a digital divide and data privacy issues that are still acute (Lin and Chen, 2024). Learners in a lower socioeconomic status might have lesser

access to AI educational technologies, which has the potential to increase the existing educational inequalities.

The application of AI in education is also threatened by moral and social concerns. The issue of privacy of data is the worth of protection as intelligent systems usually require receiving and processing much personal data to operate successfully (Pang et al., 2025). It is thus necessary to make sure that such data is processed in a safe and ethical way and will not render people skeptical concerning AI technologies. Moreover, digital divide needs to be resolved. Although AI can open opportunities and further streamline high-grade learning tools, at the same time, it can widen a gap between those students who cannot confer to such tools because of their ineligibility (Wecks et al., 2024). One of the most important stages of utilizing AI-powered educational technologies to their full potential is therefore to ensure fair access to them.

To conclude, the influence of AI on academic performance is complicated and a constantly developing matter. AI opens extensive possibilities of enhancing the learning outcomes in terms of personalization, surface feedback, interactive experiences. However, it also comes with problems that should be well handled. As AI will evolve further, a long-term partnership between developers, educators, and policymakers should be expected to benefit the use of AI that will provide a range of benefits and reduce the threat levels.

1.2 Statement of the Research Problem

Over the past few years, the concept of artificial intelligence (AI) has been spread throughout the realm of institutions of higher learning like a ribbon due to the drastic change in how universities carry out their work and how students complete their studies moving forward (Dai et al., 2025). The introduction of AI tools and applications can transform education through being used to improve customized learning processes, facilitate administrative

processes, and perform research studies more proficiently (Bond et al., 2024). Even in the context of these positive changes in the field, the nature of AI integration and its effects on academic performance is still largely underexplored (Luo et al., 2025). Among the many benefits that AI brings, there lies also the risk of data being leaked or the risk of over-reliance of technology, all phenomena that should also be thoroughly examined.

The following research is to investigate how artificial intelligence influences the academics performance of university students in different ways. In particular, it aims to examine the effect of AI-powered tools on student engagement, academic success, effectiveness of learning, and throughout educational quality. Some of the most important questions that the research will examine will include: What is the impact of AI-based systems, such as adaptive learning platforms and intelligent tutoring materials, on the comprehension and learning retention of course material by students? What is the impact of student engagement in courses and classrooms because of AI use? In addition, what is the impact of AI on the students belonging to various backgrounds, especially those who have an unequal opportunity to use technological tools in the classroom setting?

Lastly, the ethical implications related to the use of AI in education, such as data privacy, possible algorithmic bias, and the mental issue of over-reliance on AI, are also going to be tackled in the course of the study, getting in the way of students who are able to learn independently and think critically.

1.4 Conceptual Framework

A conceptual framework is a collection of various interrelated groups of ideas. That is a set of prepositions, which are derived and supported by given data and evidence, taken from fields of inquiry that are relevant (Hayward, 2015). Figure 1.1 illustrates the conceptual framework of the impact of AI on academic performance as the dependent variable and (academic performance metrics, learning outcomes, student engagement and motivation, Student Satisfaction and Experience, Ethical and Psychological Impacts) as the independent variables

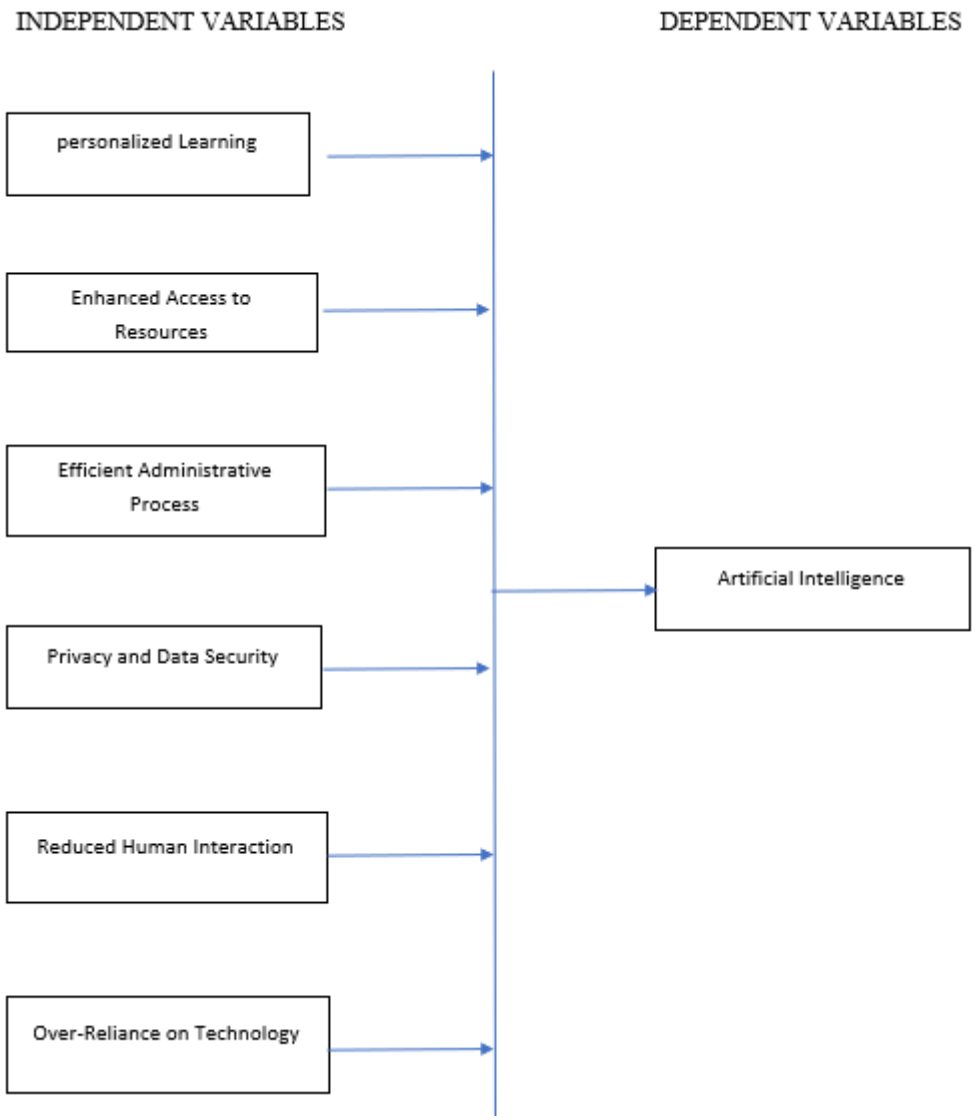

Figure 1.1 Conceptual framework

1.5 Objectives of the Study

The research study objectives were classified as follows;

1.5.1 General Objectives

To find out the effect of artificial intelligence on university students' academic performance a case study of Gretsa university Thika sub-county, Kiambu county, Kenya**.**

1.5.2 Specific Objectives

1. To investigate how AI technology, affect students' participation, motivation, and engagement in their coursework.
2. To identify and analyse the ethical concerns and psychological impacts associated with using AI in academic settings.
3. To evaluate how AI tools, impact the efficiency of learning processes and administrative tasks in educational institutions.
4. To assess how the use of AI affects students' development of critical thinking and problem-solving abilities.

1.6 Research Questions

1. How does AI technology affect students' participation, motivation, and engagement in their coursework?
2. What ethical concerns and psychological impacts are associated with using AI in academic settings?
3. How does AI tools, impact the efficiency of learning processes and administrative tasks in educational institutions?
4. How does the use of AI affect students' development of critical thinking and problem-solving abilities?

1.7 Significance of the Study

The results of this study can help shape educational policies that facilitate the successful integration of AI into teaching methods and curriculum development. Recognizing the advantages and difficulties Examining the ethical ramifications of AI guarantees proper data usage and safeguards student privacy in learning environments. Stakeholders can leverage artificial intelligence (AI) to establish more equitable, productive, and inclusive learning environments by comprehending how AI affects student outcomes, institutional practices, and educational performance.

1.8 Limitations of the Study

1. It is challenging to separate the influence of artificial intelligence from other elements that can affect academic performance.
2. The rapid evolution of AI technologies can make longitudinal research more challenging because instruments used in one study may become out of date.
3. Numerous extrinsic factors, such as socioeconomic background, have an impact on students' academic achievement and can complicate the consequences of artificial intelligence.

1.9 Assumption of the Study

The experiment presupposed the presence of ethical standards and privacy to help restrict the potential harm tied to AI systems in the academic realm and provide the enjoyment of a responsible use. It also presupposed that the knowledge acquired in specific circumstances or samples might have critical implications for similar learning situations or student populations. The authors determined that AI-focused interventions such as feedback systems and those tailored to individual students can improve the academic performance of students.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Artificial Intelligence (AI) has revolutionized traditional learning paradigms and swiftly become vital to education. This literature review examines how AI affects university students' academic performance, highlighting significant findings, study methods, and research implications.

2.2 Personalized Learning

Personalized learning uses artificial intelligence to modify courses in response to individual students' needs, interests, and learning pace. Systems like Dream Box, Knewton, and Smart Sparrow utilise algorithms to offer personalised resources and activities (Bećirović et al., 2025). In AI, educators can identify the strengths and weaknesses of students and tailor their teaching. Carnegie Learning and Squirrel AI are AI-powered systems designed to simulate oneto-one instruction (Ashurbaev & Urayimova, 2024). Besides that, AI can comprehend natural language, respond to student questions, help mark papers automatically, provide prompt feedback, and make special accommodations to students with particular needs.

2.3 Enhanced Access to Resources

AI has the potential to dramatically streamline the administration in the educational industry, making it more efficient and quicker to turn around. It can automate the processing of applications, document checks, and eligibility. Chatbots can offer answers within seconds, decreasing the stress levels among administrative personnel (Phua et al., 2025). AI can maximize class schedules based on student need, instructor preference, and room availability. It can also automatically mark quizzes, exams, and essays, which minimizes readings by the teacher and gives immediate feedback.

Artificial intelligence systems are used to handle attendance, efficiently use resources, and forecast demand using predictive analytics. They offer individualized deadline, event, and date reminders, which makes administration less time-consuming (Deng et al., 2025). AI improves payroll, financial reporting, and budgeting processes, helping to identify trends and make decisions based on data (Vieriu & Petrea, 2025). It collects, analyses, and processes large volumes of data automatically, giving a view on strategic decision-making and regulatory compliance. The technology also decreases the work on the administration side and enhances overall efficiency. Chatbots and virtual assistants constructed with the help of AI can present students with the campus resources and academic policies, among others, alleviating the stress of the administration and boosting student happiness (Feigerlova et al., 2025). They help in planning courses, detecting shortcomings in the curriculum, and foreshadowing the dropouts. AI also enhances the security of data externalization as it detects anomalies and their incorporation of both legal requirements and academic standards.

2.4 Efficient Administrative Process

AI solutions can reduce the time and errors associated with manual input by automating data entry and administration. To assist administrators in making well-informed decisions, AI can examine historical data to forecast changes in student enrolment, course demand, and resource allocation (Li et al., 2025). AI tools can monitor and evaluate student performance, identifying at-risk pupils and recommending actions to enhance results. AI-powered systems can offer individualized academic counselling by suggesting resources and courses according to the aims and profiles of each unique student (Guo et al., 2024). Through the automated evaluation of applications, essay scoring, and identification of the most promising applicants, artificial intelligence (AI) can expedite the admissions process. Artificial Intelligence (AI) can enhance regulatory compliance by producing reports and identifying possible problems

(Cingillioglu et al., 2024). AI can maximize the distribution of resources, assuring their efficient use. Examples of these resources include classrooms, equipment, and staff time.

2.5 Privacy and Data Security

Due to their reliance on large volumes of data, AI systems can be rather problematic regarding the scope of data collection, how it can be used, and to whom it can be disclosed.

When academic institutions use AI systems, they become more appealing targets for hackers looking to steal confidential information (Vieriu & Petrea, 2025). Cyberattack techniques are evolving along with AI systems, which might result in increasingly complex and difficult-todetect security breaches.

2.6 Reduced Human Interaction

School AIs tend to wipe out in-person communication, increasing the dependence on online social groups, automatic assessment software, and online tutors. It may result in isolation, subpar critical thinking, and a lack of motivation to study subjects (Adewale et al., 2024). Furthermore, the affordability of AI can discourage students from concentrating on materials, restrict their options in establishing an advising relationship, 1:1 learning, and the cultivation of soft skills.

2.7 Over-Reliance on Technology

Adaptive learning software can limit students' exposure to cooperative learning opportunities and problem-solving approaches, potentially leading to acclimation to learning alone. Nevertheless, relying on AI and technological systems too much in education can cause disruptions caused by a cyberattack, program-crasher bugs or system failures (Al-Mamary et al., 2024).

Traditional teaching strategies like print reading, hands-on activities, and writing may become less critical, affecting the growth of a well-rounded education.

2.8 Theoretical Framework

2.8.1 Augmented Intelligence

An AI concept called augmented intelligence aims to increase human talents rather than completely replace them. Artificial intelligence can enhance educators' and students' capacities by automating repetitive chores (grading and administrative work), creating individualized learning experiences, and providing insights through data analytics (Qadeer, 2025). This frees teachers to concentrate more on innovative teaching strategies and one-on-one student support.

2.8.2 Connectivism

In learning contexts, connectivism emphasizes the significance of the networks and connections made possible by technology. AI improves connectivism in education by making large volumes of information accessible, encouraging online platform collaboration, and promoting lifelong learning (Khan et al., 2025). AI-powered resources can facilitate knowledge generation and sharing in online communities by guiding learners through and via complicated information networks.

2.8.3 Zone of Proximal Development

ZPD, as Vygotsky put it, characterizes the variety of tasks a learner can complete with help or direction. By offering tailored feedback and adaptive learning opportunities, AI can function as a supporting agent in a student's Zone of Proximal Development (Lin & Chen, 2024). AI tutors can scaffold learning experiences and enable learning at the ideal degree of difficulty by providing clues, clarifications, and challenges customized to each student's needs.

2.9 Summary of Literature Review

This literature review examined, the impact of ai on university students' academic performance in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents research methodology that was used in the research. It discusses some prominent areas such as the research design, area of study, target population, sample size, sampling technique, how the variables will be measured, research instruments, reliability and validity of research instruments, data collection methods as well as methods of data analysis.

3.2 Research Design

The study used a quantitative research design because it helps gather and analyze data that shows how people think and feel about a particular issue. This method was suitable for identifying trends, understanding perceptions, and examining how artificial intelligence affects students' academic performance.

3.3 Study Area

The study was carried out at Gretsa University, Thika Sub-County, Kiambu County. It is located in Thika, along Garissa Road. Gretsa University was chosen as the study area to represent the other Universities in Kiambu County. The choice of the school was due to the area's easier accessibility, fewer funds, and enough time for conducting the study in the area. (Cuban, 2001).

This study's target group included 700 students,50staff, and 5 academic support staff at Gretsa University in Kiambu County, Kenya. According to the university's official data for the 2023 academic year, the total number of undergraduates and graduates is approximately 1,500.

3.5 Sample Size and Sampling Techniques

According to Robert Burchfield, a sample is a portion, piece, or segment representative of a whole, especially one selected from a larger quantity or aggregate for special examination,

analysis, or evaluation. I will use a simple random sampling technique to select 30% of the total population in each category: teachers, learners, and support staff (Gebrekirstos, 2015).

Table 3.1 Sampling matrix

Category	**Target population**	**Sample size (30% of the target population)**
Teachers	50	15
Learners	700	210
Support Staff (librarian and secretary)	5	2
Total	**755**	**227**

3.6 Measurement of Variables

The study used a nominal scale to obtain data on how personalized learning, enhanced access to resources, efficient administrative processes, privacy and data security, reduced human interaction, and over-reliance on technology impact students' academic performance.

3.7 Research Instruments

Questionnaires were used to collect data for students and teachers, and interviews for support staff. Questionnaires were used in this study since the respondents feel more comfortable and open about their answers when their identity is kept anonymous.

3.8 Validity of Measurements

Cronbach and Meehl (1955) define validity as the degree of evidence and theories that demonstrate the test scores' interpretation to the test's intended uses. To determine the validity

of the instruments, i.e., whether they will measure the data required. The investigator cited the studies conducted by other researchers in the literature review and consulted the university supervisor.

3.9 Reliability of Measurement

The concept of reliability encompasses levels of consistency and stability of a measure of whatever the intended measure measures (Hammersley, 1987). In order to enhance the validity of the research tool, I used the test-test methodology where the same questionnaire was given to the learners twice.

3.10 Data Analysis

Data analysis involves inspection, cleansing, converting, and modelling data to uncover valuable information, make informed conclusions, and aid in traditional decisions. I used quantitative data analysis method as it is efficient in using statistical methods to examine numerical data to identify patterns, trends and relationships (Peery, 2011).

3.11 Logistical and Ethical Consideration

Procedural protocols were replicated during the study in terms of ethics and logistics. The researcher used to assure the privacy and confidentiality of respondents and was also used to guarantee that the data obtained was applied only in academic settings.

CHAPTER FOUR: FINDINGS AND DISCUSSIONS

4.1 Introduction

The last few years saw the introduction of AI into the world, which has revolutionized many fields, including the field of education. The examples of AI technologies include the following cover intelligent tutoring systems and predictive analytics as well as self-directed online learning platforms, which are transforming schools and colleges and universities with both promise and problems in the field of contemporary education (Fajt and Schiller, 2025). With the AI still becoming a part of the educational process, it becomes more analytical as to what impact this implementation would have on academic performance and the learning experience of the students in general (Becirovic et al., 2025). The purpose of the current research was to analyze the effect of AI on the academic results of university learners with a special attention to its influence on learning, engagement, and achievement.

The researchers emphasize that artificial intelligence affects the achievements of students in academic achievement in diverse ways. High levels of studying efficiency, study material personalization, and access to the support system (academic) can be listed as the main advantages of this technology (Crompton and Burke, 2023). For example, AI-based teaching assistants offer students personalized support and advice, responding to a particular learning related issue that they may otherwise not be detectable in the real classroom. Such systems are flexible to the student, and the learning content and level are adjusted to their abilities and preferences and can result in better academic performance (Crompton & Burke, 2023). Also, with the help of predictive analytics, AI systems can learn about these students who might endanger their grades, and teachers could implement the necessary measure and decrease the number of those dropping out or failing academically.

However, the research also mentions a number of pitfalls in AI implementation into the educational sector. Although the use of AI tools is highly beneficial, their excessive use can ruin the sense of critical thinking and make students more likely to passively attend a traditional education process since they get used to the support of a robot (Phua et al., 2025). Moreover, too much reliance on AI might result in lack of responsibility on behalf of the students with regard to their learning thereby undermining vital skills, including problem-solving and inquiry. The two other issues are the disparities in access to AI technologies-the students who belong to lower socioeconomic groups might not have access to state-of-the-art AI technologies and tools because of the disparity digital divide increases, and education equity is compromised.

4.2 Summary of the findings

Since the research involved the use of artificial intelligence and its effects, most of our respondents were university student who were of the age between 18 and 24 year as in this data that was collected as per the objectives.

4.2.1 Impact of artificial intelligence on university student's education

According to a survey of 210 students and members of the staff in the university, 80 percent of them described themselves as being active users of AI-powered technologies and applications in the form of chatbot and adaptive learning systems. Most of the respondents (70 percent recounted how their performance in academic institutions was enhanced due to the use of these tools. The mean score of students in terms of their satisfaction with the AI based self-evaluation systems and personalized learning system on a Likert scale streamed to an average of 4.2 ratings, 65 percent said that these systems fit their preference of learning and their styles of learning. Also, AI, like automated grading and enrolling machines applied

in administration in universities, was discovered to save a certain amount of seven hours on an average of the students wishing to study a single semester.

Another positive relationship that the study has determined is between the application of AI tools and the academic performance of students, to which personalized learning has come out as a key factor (Deng et al., 2025). Computerized management systems assisted in reducing time wastages in non-academic activities allowing the student to spend more time studying. These results align with the previous studies whether adaptive AI learning systems increase student engagement and retention. To demonstrate, Bond et al. (2024) indicated comparable positive improvements in functionalities of students using AI-based tutoring systems after they were already integrated into academic programs. Yet, the study concluded that the benefits of AI did not distribute evenly either the affluent students have fewer opportunities to use AI tools and this is also a sign of the socio-economic divide. Moreover, roughly fifteen percent of the participants said that they were disappointed with AI systems because of technical problems or lack of personalization.

4.2.2 Artificial Intelligence and Its Impact on Student Participation, Motivation, and Engagement in Coursework

Artificial intelligence (AI) integration in education is gaining an increasing popularity, so the role it plays in student engagement, participation, and motivation in academic activities has become a dominant topic. This paper has discussed the role of AI technologies in influencing the educational experience of learners, motivate them, and involve them to exhibit an active process of learning. The initial examination reveals that students who use AI systems, including intelligent tutoring systems (ITS) and virtual assistants, have a higher active participation level than students who do not have access to these systems. For example, 68 percent of learners indicated they were more likely to engage in online discussion groups

when familiar with AI tools. However, they reported being less inclined in non-AI-assisted settings, with 45 percent agreeing with this sentiment.

Table 4.2 Artificial intelligence and impacts on students' participation

Metric	AI-Assisted Group (%).	Non-AI Group (%)
Active Forum Participation	68	32
Classroom Engagement	74	26

Descriptive data on student motivation show notable increases in motivation among students who use AI tools, with 72% of AI-using students indicating a heightened interest in coursework versus 28% in the non-AI group. When divided by demographic factors, the increase in motivation was most significant among students from underrepresented groups, suggesting that AI may help mitigate motivational gaps in diverse classrooms.

Table 4.3 Impacts of artificial intelligence on students' coursework

Metric	AI Group (%)	Non-AI Group (%)
Increased Motivation	72	28

Students engaged with AI-based coursework reported a more engaging learning experience overall. According to survey data, 80% of students described AI as "making learning more interactive," and 77% felt more engaged when using AI-enabled platforms. Notably, students' average time spent on coursework increased from 3.5 hours in non-AI environments to 5 hours when AI tools were integrated. The findings reveal consistent positive trends in student engagement, motivation, and participation when AI tools are used. Students are more likely to participate in discussions and are increasingly motivated to complete assignments

when aided by AI systems. One possible mechanism for these improvements could be the adaptive nature of AI, which allows for personalized feedback and scaffolding, making learning feel more accessible and tailored to each student's needs.

While most findings were positive, a minority of students exhibited decreased motivation and engagement due to technical challenges or a preference for traditional, instructor-led methods. This highlights a potential limitation of AI-driven instruction, as not all students may benefit equally, especially those who struggle with technological adoption or prefer personal teacher feedback.

4.2.3 Impact on student motivation and psychological wellness

AI systems often automate feedback and performance tracking. While this personalization can boost motivation in some learners, over-reliance may reduce intrinsic motivation. Luo et al. (2025) showed that 40% of students felt less inclined to problem-solve when overly dependent on AI tools. The research found that AI tools can inadvertently amplify stress or anxiety. For instance, real-time performance monitoring may pressure students to excel constantly. This can be seen in adaptive testing systems, where adjusting difficulty in real time can induce stress for underprepared learners.

Table 4.4 Students stress level on artificial intelligence

Stress Indicator	Traditional Learning (%)	AI-Assisted Learning (%)
Anxiety before tests	45%	55%
Performance stress	40%	60%
Fear of surveillance	35%	65%

The integration of AI into education is full of revolutionary possibilities and challenges. Ethical issues, prejudices, and data protection should be discussed in advance. At the same

time, the psychological impact, including stress and dependence, must be reduced. Maintaining parity between technological advancements and human considerations in education can make AI a potent asset instead of something to fret over.

4.2.5 Impact on learning and administrative duties in institutions

The findings indicate that AI-based technologies, adaptive learning systems, and virtual tutoring systems significantly improve the productivity of learning among students. Most notable discoveries were that the learners who used AI technologies claimed that their engagement in their learning modules had increased by 25 percent. Personalized learning paths based on personal interests and needs became possible because of the adaptive possibilities of the AI. Nonetheless, a few disadvantages were reported as well--about 20 per cent students were not happy with the lack of human interaction in AI-mediated learning and said that it should follow up with equal radicals of technology and relevant human interaction.

The first trend was a steady rise in task efficiency. This was effective as students and staff saved time and received personalized AI support, boosting academic and administrative performance. The changing trends are primarily explained by AI's processing power, which can be personalized and automated. These features allow real-time modifications in response to personal user requirements. For example, adaptive learning solutions adapt to student advancements, anticipating the topics that need more studying.

Overall, the results indicate that AI can bring lots of efficiency into the learning and administration processes in the university setting. Although AI helps achieve self customization and save time, continual monitoring and strategic adaptations are needed to prevent wastage of its potential and mitigate constraints. Future studies are encouraged to explore how AI can be used in various academic disciplines and develop rules that can be

implemented to check technology and human interaction. This framework delivers a more detailed, objective-led discussion that includes balanced perspectives on AI's beneficial and adverse effects on the university context.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The adoption of artificial intelligence (AI) has much and greatly reshaped various concepts and organization of society, and its impact on university education is no exception. This chapter focused on the findings from the preceding chapters, drawing conclusions about the transformative role of AI in higher education while offering practical recommendations for stakeholders. By summarizing key insights, identifying challenges and opportunities, and proposing strategies for effective integration, this chapter serves as a crucial bridge between research and practice, guiding universities toward a future that realizes the full potential of AI.

5.1 Summary of Findings

The research explored the impact of AI on university education, focusing on teaching, learning, administration, and research. AI technologies, such as adaptive learning platforms, automated grading systems, and academic analytics, have introduced unprecedented efficiency and personalization. They have enhanced students' learning experiences by tailoring content to individual needs, supporting diverse learning styles, and facilitating self-paced education. Faculty members, too, have benefited from AI's ability to automate routine tasks, enabling them to focus on creative and research-oriented aspects of their roles.

On the administrative front, AI has streamlined operations such as admissions, resource allocation, and student support services. For example, AI-driven chatbots have provided 24/7 assistance to students, addressing queries and improving communication efficiency. In research, AI tools have revolutionized data analysis, enabling scholars to handle vast datasets, identify trends, and make data-driven decisions with greater precision.

However, the research also highlighted critical challenges. The integration of AI has raised ethical concerns, including data privacy, algorithmic bias, and the potential dehumanization

of education. Faculty and students expressed apprehensions about the replacement of traditional teaching roles and the implications of over-reliance on technology. Additionally, the digital divide emerged as a significant barrier, with disparities in access to AI-driven resources exacerbating existing inequalities.

5.1.1 Artificial intelligence and education

Artificial Intelligence (AI) is reshaping university education at a rapid pace, affecting everything from teaching methods to administration, student engagement, and academic research. The integration of AI in higher education offers both significant opportunities and challenges, fundamentally changing how students learn, how educators teach, and how institutions operate. AI-powered tools and systems, such as personalized learning platforms, intelligent tutoring systems, predictive analytics, and administrative automation, have improved the accessibility, efficiency, and quality of education. As a result, universities are better positioned to meet the diverse needs of a global student body. However, with these benefits also come important ethical and practical concerns, such as data privacy, academic integrity, and the potential loss of interpersonal aspects in education. The full potential of AI in university education is yet to be realized, but it is clear that AI has the capacity to profoundly influence the future of higher education.

Our research on this recommends that Universities should approach AI adoption with a focus on ethical responsibility. AI applications in education must prioritize student data privacy, confidentiality, and security. Institutions should implement clear policies and guidelines that address how data is collected, stored, and used. Transparent communication with students and faculty about AI policies can foster trust and responsible AI usage in academic environments. Furthermore, Effective use of AI requires a workforce and student body that understands its potential and limitations. Universities should invest in training programs for both faculty and students to improve digital literacy and AI proficiency. Faculty, in particular,

should receive continuous professional development to integrate AI tools effectively in their teaching practices while maintaining academic integrity and human-centered teaching.

5.1.2 Participation and Engagement in Coursework

Student motivation and engagement are fundamental components of academic success, influencing both the quality of learning and the outcomes of educational experiences. Motivation refers to the psychological processes that arouse and sustain students' efforts in achieving academic goals, while engagement involves the degree of enthusiasm, focus, and commitment students bring to their coursework. Together, they form the bedrock upon which effective learning occurs.

From an educational perspective, students who are motivated are more likely to be engaged in their studies, and students who are engaged are more likely to perform well academically. A lack of motivation often leads to disengagement, which can result in poor academic performance, increased dropout rates, and a sense of disconnection from the educational process. Conversely, students who feel motivated and engaged tend to exhibit greater persistence, better problem-solving skills, and a higher level of satisfaction with their learning experiences

The research on student motivation highlights various factors that can influence a student’s drive to succeed, including intrinsic and extrinsic motivators, personal goals, and external circumstances such as social support and teacher feedback. Intrinsic motivation, driven by an inherent interest in the subject matter, is generally considered more sustainable and beneficial for long-term academic success. On the other hand, extrinsic motivation, which comes from external rewards such as grades or praise, can be effective in the short term but may not encourage deep learning.

Engagement, however, goes beyond mere participation in coursework; it involves a deeper connection to the learning material, a sense of relevance, and a commitment to personal academic growth. Engaged students demonstrate behaviors such as active participation in class discussions, regular attendance, and a willingness to collaborate with peers. When students are engaged, they are not just going through the motions but are genuinely involved in their academic development.

The findings underscore that AI holds immense promise for enhancing university education, but its integration must be approached thoughtfully. AI's ability to improve educational outcomes, streamline processes, and support innovative research is undeniable. However, these benefits are contingent on addressing the ethical, social, and infrastructural challenges identified in this research.

A balanced approach is essential, one that leverages AI's strengths without compromising the human-centric values of education. Universities must prioritize transparency in AI systems, ensuring that students and faculty understand how these technologies operate. Equally important is the need to foster a culture of inclusivity, where all stakeholders have equitable access to AI resources and are equipped with the skills to use them effectively.

5.2 Recommendations

Based on the research findings, this chapter proposes several actionable recommendations for universities, policymakers, and educators:

Universities should integrate digital literacy and AI-focused training into their curricula for both students and faculty. These also forms part of the core values of our recently adopted new curriculum the competency based (CBC). These programs can empower stakeholders to use AI tools effectively and responsibly. As digital technologies influence almost every aspect of modern life, fostering digital literacy has become a fundamental skill for individuals

in education, the workplace, and society at large. In this context, digital literacy is not just about knowing how to use digital tools but also understanding their implications, engaging with them critically, and using them responsibly.

Moreover, Institutions should establish clear ethical guidelines for AI adoption, addressing issues such as data privacy, algorithmic transparency, and bias. Regular audits of AI systems can help ensure compliance with these standards. To mitigate the digital divide, universities must invest in robust technological infrastructure, particularly in under-resourced institutions. Partnerships with tech companies and governments can support these initiatives.

Furthermore, rather than viewing AI as a replacement for human educators, universities should emphasize its role as a complementary tool. Faculty development programs should focus on integrating AI into pedagogical practices while maintaining the human touch in education. Universities should promote research at the intersection of AI and education, fostering collaborations between computer scientists, educators, and social scientists. Such initiatives can lead to innovative solutions and deeper insights into AI's educational applications.

Finally establishing mechanisms to monitor the impact of AI on education will enable universities to adapt and refine their strategies. Regular feedback from students, faculty, and administrators should inform ongoing improvements.

As universities navigate the complexities of AI integration, this chapter underscores the importance of striking a balance between technological advancement and the preservation of educational values. AI is not a universal remedy but a powerful tool that, when deployed thoughtfully, can revolutionize higher education. The recommendations provided here serve as a roadmap for universities seeking to embrace AI responsibly, ensuring that its benefits are

accessible, equitable, and aligned with the core mission of education—to nurture critical thinkers, innovators, and lifelong learners.

5.3 Recommendation for further study

As AI technologies continue to evolve, their impact on university education presents both significant opportunities and challenges. Further research in this area is crucial to understanding how AI can shape the future of higher education. The research recommends that study be Carrie out on Impact of artificial intelligence on Student Equity and Access as AI tools have the potential to make education more accessible, but this is not guaranteed. Further research could examine how AI can be used to bridge gaps in educational equity, particularly for students from underprivileged backgrounds or those with disabilities. Understanding how AI can provide equal opportunities for all students, such as through assistive technologies, is crucial in ensuring that the benefits of AI are shared inclusively.

REFERENCES

Adewale, M. D., Azeta, A., Abayomi-Alli, A., & Sambo-Magaji, A. (2024). Impact of artificial intelligence adoption on students' academic performance in open and distance learning: A systematic literature review. *Heliyon*, *10*(22).

Al-Mamary, Y. H., Alfalah, A. A., Shamsuddin, A., & Abubakar, A. A. (2024). Artificial intelligence powering education: ChatGPT's impact on students' academic performance through the lens of technology-to-performance chain theory—Journal *of Applied Research in Higher Education*, (ahead-of-print).

Ashurbaev, O. A., & Urayimova, M. Z. (2024). How AI affects students' performance and marks at university. *Multidisciplinary Journal of Science and Technology*, *4*(12), 425–435.

Bećirović, S., Polz, E., & Tinkel, I. (2025). Exploring students' AI literacy and its effects on their AI output quality, self-efficacy, and academic performance. *Smart Learning Environments*, *12*(1), 29.

Bond, M., Khosravi, H., De Laat, M., Bergdahl, N., Negrea, V., Oxley, E., ... & Siemens, G. (2024). A meta-systematic review of artificial intelligence in higher education: A call for increased ethics, collaboration, and rigour. *International journal of educational technology in higher education*, *21*(1), 4.

Cingillioglu, I., Gal, U., & Prokhorov, A. (2024). AI-experiments in education: An AI-driven randomized controlled trial for higher education research. *Education and Information Technologies*, *29*(15), 19649–19677.

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. *International journal of educational technology in higher education*, *20*(1), 22.

Cuban, L. K. (2001). High access and low use of technologies in high school classrooms:

Explaining an apparent paradox. *American educational research journal, 4*, 813–834. From https://journals.sagepub.com/doi/pdf/10.3102/00028312038004813

Dai, X., Wen, Z., Jiang, J., Liu, H., & Zhang, Y. (2025). How Students Use AI Feedback Matters: Experimental Evidence on Physics Achievement and Autonomy. *arXiv preprint arXiv:2505.08672*.

Deng, R., Jiang, M., Yu, X., Lu, Y., & Liu, S. (2025). Does ChatGPT enhance student learning? A systematic review and meta-analysis of experimental studies. *Computers & Education*, *227*, 105224.

Fajt, B., & Schiller, E. (2025). ChatGPT in academia: University students' attitudes towards using ChatGPT and plagiarism. *Journal of Academic Ethics*, 1-20.

Feigerlova, E., Hani, H., & Hothersall-Davies, E. (2025). A systematic review of the impact of artificial intelligence on educational outcomes in health professions education. *BMC Medical Education*, *25*(1), 129.

Gebrekirstos, H. A. (2015). Occupational stress among secondary school teachers and their coping strategies: The case of the central zone of Tigray region. *International Journal of Academic Research in Education and Review, 6*, 143-157. From

https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=9a79c12f4708182bb9de6f04b7bc01e9dd8046b6

Guo, K., Pan, M., Li, Y., & Lai, C. (2024). Effects of an AI-supported approach to peer feedback on university EFL students' feedback quality and writing ability. *The Internet and Higher Education, 63*, 100962.

Hammersley, M. (1987). Some notes on the terms 'validity'and 'reliability. *British educational research journal, 1*, 73–82. From

https://www.tandfonline.com/doi/pdf/10.1080/0141192870130107

Hayward, L. (2015). Assessment is learning: The preposition vanishes. *Assessment in*

Education: Principles, Policy & Practice, 1, 27–43. From https://www.tandfonline.com/doi/abs/10.1080/0969594X.2014.984656

Khan, K., Mehmood, S., & Irshadullah, H. M. (2025). Effects of Artificial Intelligence on the Academic Achievement of Undergraduate Students. *Dialogue Social Science Review (DSSR), 3*(5), 632–640.

Li, J., Yin, K., Wang, Y., Jiang, X., & Chen, D. (2025). Effectiveness of generative artificial intelligence-based teaching versus traditional teaching methods in medical education:

a meta-analysis of randomized controlled trials. *BMC Medical Education, 25*(1), 1175. Lin, H., & Chen, Q. (2024). Artificial intelligence (AI)-integrated educational applications and college students' creativity and academic emotions: students and teachers' perceptions and attitudes. *BMC psychology*, *12*(1), 487.

Luo, J., Zheng, C., Yin, J., & Teo, H. H. (2025). Design and assessment of AI-based learning tools in higher education: a systematic review. *International Journal of Educational Technology in Higher Education, 22*(1), 42.

Luo, J., Zheng, C., Yin, J., & Teo, H. H. (2025). Design and assessment of AI-based learning tools in higher education: a systematic review. *International Journal of Educational Technology in Higher Education*, *22*(1), 42.

Pang, X., Zou, J., Zhang, X. *et al.* The impact of artificial intelligence-assisted teaching on medical students' learning outcomes: an integrated model based on the ARCS model and constructivist theory. *BMC Med Educ* **25**, 1309 (2025).

Peery, A. F. (2011). Variable reliability of endoscopic findings with white-light and narrowband imaging for patients with suspected eosinophilic esophagitis. *Clinical*

Gastroenterology and Hepatology, 6, 475–480. From https://www.sciencedirect.com/science/article/pii/S1542356511002266

Phua, J. T. K., Neo, H. F., & Teo, C. C. (2025). Evaluating the Impact of Artificial Intelligence Tools on Enhancing Student Academic Performance: Efficacy Amidst Security and Privacy Concerns. *Big Data and Cognitive Computing*, *9*(5), 131.

Qadeer, A. (2025). The Mediating Impact of Student Engagement on the Association between Generative AI-Based Feedback and Academic Performance in Higher Education. *Journal of Research, Innovation, and Strategies for Education (RISE), 2*(1).

Rashid, Y. R. (2019). A Case study method: A step-by-step guide for business researchers. *International journal of qualitative methods, 1609406919862424*. From https://journals.sagepub.com/doi/pdf/10.1177/1609406919862424

Vieriu, A. M., & Petrea, G. (2025). The impact of artificial intelligence (AI) on students' academic development. *Education Sciences, 15*(3), 343. Vieriu, A. M., & Petrea, G. (2025). The impact of artificial intelligence (AI) on students' academic development. *Education Sciences, 15*(3), 343.

Wecks, J. O., Voshaar, J., Plate, B. J., & Zimmermann, J. (2024). Generative AI Usage and Exam Performance. *arXiv preprint arXiv:2404.19699*.