# INFLUENCE OF ARTIFICIAL INTELLIGENCE ON THE ACADEMIC PERFORMANCE OF SENIOR SECONDARY SCHOOLS IN ILORIN METROPOLIS

**BY**

**BAKARE, YUSIRAT MOSUNMOLA**

**MATRIC NO: 2022/0394**

**DEPARTMENT OF ENGLISH LANGUAGE**

**KWARA STATE COLLEGE OF EDUCATION, ILORIN**

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CERTIFICATION

This research work has been read and approved as meeting the requirement of in partial fulfillment for the award of Nigeria Certificate in Education in the Department of English Language, School of Langauages, Kwara State College of Education, Ilorin.

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| Project Supervisor | Signature | Date |
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| Head of Department | Signature | Date |
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| Project Co-coordinator | Signature | Date |

# DEDICATION

I dedicate this project to Almighty God. Also to my lovely husband Mallam Garuba Abdullahi Baba, my sister Bakare khairat Atoke and my children Fatiah, Firdaos, Faisol, Far'han, Far'ha. May God almighty continue to protect, guide, and strengthen you all.

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## Abstract

*This study examined the influence of Artificial Intelligence (AI) on the academic performance of senior secondary school students in Ilorin, Kwara State, Nigeria. The research aimed to determine students' and teachers' perceptions of AI, identify commonly used AI tools, and evaluate their impact on learning outcomes. A descriptive survey research design was adopted, and a total of 160 respondents (150 students and 10 teachers) were selected using stratified random sampling. A structured questionnaire was used for data collection, and the data were analyzed using descriptive statistics such as frequency counts, percentages, and mean scores. Findings revealed that students and teachers perceived AI as significantly beneficial in enhancing personalized learning, improving academic engagement, and providing quick access to learning resources. Commonly used AI tools included ChatGPT, Grammarly, Google Translate, and adaptive learning platforms. However, challenges such as inadequate infrastructure, limited AI literacy, and ethical concerns were identified. The study concluded that AI has the potential to improve academic performance if effectively integrated into the educational system. Recommendations were made for government, school administrators, and stakeholders to invest in digital infrastructure, provide AI literacy training, and develop ethical guidelines for AI usage in schools.*



*Keywords: Artificial Intelligence, Academic Performance, Senior Secondary School, AI Tools, Personalized Learning, Nigeria*

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# CHAPTER ONE

# INTRODUCTION

## Background to the Study

Artificial Intelligence (AI) has emerged as a transformative force across various sectors, including education (Adelana & Akinyemi, 2021). In Nigeria, the integration of AI into educational practices is gaining momentum, aiming to enhance learning experiences and academic outcomes (Analysis of Emerging Trends in AI, 2024). This study focuses on the influence of AI on the academic performance of senior secondary school students in Ilorin, Kwara State. The Nigerian education system faces challenges such as overcrowded classrooms, limited resources, and a shortage of qualified teachers (Impact of AI on Nigerian Education, 2023). These issues often lead to suboptimal student performance and engagement. AI technologies offer potential solutions by providing personalized learning experiences, automating administrative tasks, and facilitating access to quality educational materials (AI-Powered Learning Tools, 2024).

Recent studies have highlighted the positive impact of AI on education. AI-powered tutoring systems can adapt to individual learning styles, offering customized instruction that addresses specific student needs (ResearchGate, 2024). In Ogun State, research indicates that senior secondary students are aware of and ready to adopt AI-based tutoring systems, suggesting a favorable disposition towards AI-enhanced learning (Adelana & Akinyemi, 2021). Moreover, AI tools have been shown to improve study habits and academic performance. A study exploring AI's effectiveness in enhancing student learning found a significant reduction in study hours alongside an increase in GPA, suggesting positive academic outcomes (arXiv, 2024). Similarly, AI technologies, including machine

learning and natural language processing, play a pivotal role in enhancing educational practices by facilitating personalized learning experiences and optimizing curriculum design (International Journal of Educational Research, 2024).

However, the integration of AI into Nigerian secondary education is not without challenges. Factors such as inadequate infrastructure, lack of trained personnel, and ethical considerations pose significant hurdles (Techpoint Africa, 2020). Despite these challenges, the potential benefits of AI in transforming education are substantial, necessitating a comprehensive examination of its impact on student performance. In Ilorin, understanding the specific influence of AI on senior secondary students' academic performance is crucial. This study aims to fill the existing knowledge gap by investigating how AI technologies affect learning outcomes in this context. The insights gained will inform educators, policymakers, and stakeholders on effective strategies for integrating AI into the educational framework to enhance student achievement.

**Statement of the Problem**

Artificial Intelligence (AI) has become an integral part of various sectors, including education, where it has the potential to enhance learning outcomes through personalized instruction, automated grading, and real-time feedback (Zawacki-Richter et al., 2019). However, the extent to which AI influences the academic performance of senior secondary school students in Ilorin remains unclear. While AI-powered learning tools offer opportunities for improved engagement and tailored learning experiences (Holmes et al., 2021), there are concerns about students' dependence on technology, the potential decline

in critical thinking skills (Luckin et al., 2018), and disparities in access to AI resources (Aoun, 2017).

In Nigerian secondary schools, challenges such as large class sizes, insufficient instructional materials, and inconsistencies in curriculum implementation negatively affect students' learning experiences (Ogunleye, 2020). AI-driven technologies promise solutions by optimizing content delivery, fostering interactive learning environments, and aiding educators in managing workload (Selwyn, 2019). Despite these advantages, there is limited empirical evidence on the effectiveness of AI in improving student academic performance in Ilorin, creating a knowledge gap that this study seeks to address. Furthermore, students and teachers may have varying perceptions of AI in education, which could influence its adoption and effectiveness (Baker & Smith, 2019). Issues such as digital literacy, infrastructure constraints, and ethical considerations also play crucial roles in determining the success of AI integration in secondary schools (Ng et al., 2021). Without a clear understanding of these factors, there is a risk of implementing AI solutions that do not align with students' learning needs or educational goals (Schiff, 2021).

This study aims to investigate the influence of AI on students' academic performance, identifying both its benefits and challenges. By assessing the impact of AI-powered tools on learning outcomes, this research will provide valuable insights for educators, policymakers, and stakeholders on how to optimize AI integration in secondary education to enhance academic achievement.

## Objectives of the Study

The main objective of this study is to examine the influence of artificial intelligence on the academic performance of senior secondary school students in Ilorin. Specifically, the study seeks to:

i. Investigate the extent to which AI-powered learning tools impact students' academic performance in senior secondary schools.
ii. Assess the perception of students and teachers regarding the effectiveness of AI in enhancing learning outcomes.
iii. Identify the challenges associated with the integration of AI technologies in secondary school education and propose possible solutions.

## Research Questions

This study seeks to answer the following research questions:

i. To what extent do AI-powered learning tools influence the academic performance of senior secondary school students in Ilorin?
ii. What are the perceptions of students and teachers regarding the effectiveness of AI in improving learning outcomes?
iii. What challenges do students and teachers face in integrating AI into secondary school education?

**Research Hypotheses**

The study is guided by the following hypotheses:

i. $H_0 1$: AI-powered learning tools have no significant impact on the academic performance of senior secondary school students in Ilorin.

   $H_1 1$: AI-powered learning tools have a significant impact on the academic performance of senior secondary school students in Ilorin.

ii. $H_0 2$: There is no significant relationship between students' perceptions of AI and its effectiveness in improving learning outcomes.

   $H_1 2$: There is a significant relationship between students' perceptions of AI and its effectiveness in improving learning outcomes.

iii. $H_0 3$: The challenges associated with AI integration do not significantly affect its adoption in secondary schools.

   $H_1 3$: The challenges associated with AI integration significantly affect its adoption in secondary schools.

## Significance of the Study

This study is significant for several reasons:

- **Educational Policy Development:** The findings of this study will provide valuable insights for policymakers and educational stakeholders in designing and implementing AI-driven educational strategies that enhance student learning outcomes.

- **Improvement in Teaching and Learning:** The study will help teachers and educators understand how AI can be effectively integrated into classroom teaching to improve instructional delivery and student engagement.
- **Student Academic Performance:** By identifying the benefits and challenges of AI-powered learning tools, this study will help students maximize their academic potential through personalized and adaptive learning experiences.
- **Future Research:** This research will serve as a reference point for future studies on the integration of AI in education, contributing to the growing body of knowledge in the field of educational technology.
- **Technological Advancement in Education:** The study will highlight how AI technologies can be leveraged to bridge learning gaps, promote inclusive education, and enhance overall educational outcomes in secondary schools.

## Scope and Limitations of the Study

### Scope of the Study

This study focuses on examining the influence of artificial intelligence (AI) on the academic performance of senior secondary school students in Ilorin. It covers AI-powered learning tools, students' and teachers' perceptions of AI, and the challenges associated with its integration into education. The study will be limited to selected secondary schools in Ilorin, ensuring a representative sample of students and teachers. Data collection will include surveys, interviews, and academic performance records to assess the impact of AI in education.

## Limitations of the Study

- **Geographical Limitation:** The study is confined to Ilorin, and findings may not be generalizable to other regions with different educational infrastructures and technological advancements.
- **Limited Sample Size:** Due to resource and time constraints, only a specific number of schools and respondents will be included, which may limit the broader applicability of the results.
- **Reliability of Data:** The study relies on self-reported data from students and teachers, which may be subject to personal biases or inaccuracies.
- **Evolving Nature of AI:** AI technology is rapidly changing, and some findings may become outdated as new advancements emerge.
- **Access to AI Tools:** Not all schools may have access to AI-powered learning tools, which could influence the extent of its impact on academic performance.

## Definition of Key Terms

- **Artificial Intelligence (AI):** The simulation of human intelligence in machines that are programmed to think and learn, commonly applied in education through adaptive learning platforms, chatbots, and virtual tutors.
- **Academic Performance:** The measurable outcomes of students' learning activities, often evaluated through grades, test scores, and overall educational achievements.
- **AI-Powered Learning Tools:** Educational technologies that incorporate artificial intelligence to personalize learning experiences, such as intelligent tutoring systems and automated grading software.

- **Senior Secondary School:** The stage of formal education typically attended by students aged 15–18 years, preparing them for higher education or vocational training.
- **Machine Learning:** A subset of AI that enables computers to learn from data and improve their performance over time without being explicitly programmed.
- **Personalized Learning:** An educational approach that tailors instruction, content, and pacing to meet individual student needs using AI algorithms.
- **EdTech (Educational Technology):** The use of technology, including AI, to facilitate and enhance teaching and learning processes.
- **Digital Literacy:** The ability to use digital tools and technology effectively for communication, learning, and problem-solving.
- **Automated Assessment:** The use of AI-driven systems to evaluate student work, provide feedback, and assess learning outcomes.
- **Pedagogical Integration of AI:** The incorporation of AI tools and methodologies into teaching strategies to improve instructional effectiveness.

# CHAPTER TWO

# LITERATURE REVIEW

## Concept of Artificial Intelligence in Education

Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks typically requiring human intelligence, such as learning, reasoning, problem-solving, and decision-making (Russell & Norvig, 2021). AI has gained significant traction in the field of education, transforming how students learn, teachers instruct, and institutions manage academic processes (Holmes, Bialik, & Fadel, 2021). The use of AI in education is broad, encompassing various applications such as personalized learning, intelligent tutoring systems, automated grading, and data-driven decision-making (Luckin et al., 2018). AI-powered tools can analyze students' learning patterns and adapt educational content to meet their individual needs, thereby improving learning efficiency and academic performance (Ng Lee, & Khine, 2021). Studies have shown that adaptive learning platforms powered by AI can significantly enhance students' understanding of complex subjects by providing customized content and real-time feedback (Zawacki-Richter et al., 2019).

Furthermore, AI facilitates administrative efficiency by automating routine tasks such as attendance tracking, grading, and student progress monitoring, allowing teachers to focus on more interactive and engaging teaching activities (Holmes et al., 2021). For example, AI-driven grading systems have been found to reduce teachers' workload while maintaining or even improving the accuracy of assessments (Schiff, 2021). A critical advantage of AI in education is its ability to foster inclusive learning environments. AI-driven applications, such as speech-to-text software and AI-powered translators, support

students with disabilities and those from non-English-speaking backgrounds (Baker & Smith, 2019). These technologies enable students with learning difficulties to access education materials more effectively and at their own pace, thereby improving their academic performance (Aoun, 2017). Despite these advantages, the integration of AI in education is not without challenges. One of the key concerns is data privacy and security, as AI systems collect and process vast amounts of student data (Luckin et al., 2018). Ensuring that this data is protected from breaches and misuse is crucial for maintaining students' trust and compliance with ethical standards (Ng et al., 2021). Additionally, there is the issue of the digital divide, where students from low-income backgrounds may lack access to AI-powered educational tools, thereby exacerbating educational inequalities (Ogunleye, 2020).

Moreover, some educators express concerns that AI might replace traditional teaching methods, potentially reducing human interaction in the learning process (Selwyn, 2019). While AI can complement teaching, it is not a substitute for human educators, as interpersonal relationships and emotional intelligence remain critical aspects of effective teaching and learning (Holmes et al., 2021). Research suggests that the most effective educational environments combine AI-powered tools with human oversight to ensure a balanced and engaging learning experience (Schiff, 2021). In the context of secondary education, particularly in Ilorin, AI adoption remains in its early stages. Factors such as infrastructure, teacher preparedness, and accessibility to AI-powered learning tools play a critical role in determining its effectiveness in enhancing student academic performance (Ogunleye, 2020). Many schools in Nigeria still face technological limitations, such as

inadequate internet connectivity and insufficient digital literacy among teachers and students (Baker & Smith, 2019).

However, some Nigerian schools have begun experimenting with AI-driven tools to support learning. For instance, AI-powered platforms such as interactive whiteboards, chatbots for student support, and automated assessment tools are gradually being introduced in some urban schools (Ng et al., 2021). The success of these initiatives depends on proper implementation, teacher training, and government support (Aoun, 2017). AI has the potential to revolutionize education by providing personalized learning experiences, improving efficiency, and supporting inclusive education. However, its successful implementation requires addressing challenges related to data privacy, accessibility, and teacher preparedness. This study seeks to explore these aspects further by examining the impact of AI on the academic performance of senior secondary school students in Ilorin.

**AI-Based Learning Tools and Their Applications**

Artificial Intelligence (AI)-based learning tools have significantly transformed the education sector, providing innovative solutions to enhance teaching and learning experiences. These tools leverage machine learning algorithms, natural language processing, and data analytics to personalize learning, automate assessments, and offer interactive engagement for students and teachers (Luckin et al., 2018). This section explores various AI-based learning tools, their applications, and their impact on academic performance. AI-based learning tools have the potential to revolutionize secondary education by offering personalized learning experiences, automating assessments, and improving student engagement. However, addressing challenges related to accessibility,

teacher training, and ethical considerations is crucial for their successful implementation. In Ilorin, leveraging AI-powered tools can enhance academic performance if integrated strategically into the education system.

### Intelligent Tutoring System (ITS)

Intelligent Tutoring Systems (ITS) are AI-powered platforms designed to provide personalized instruction and real-time feedback to students. These systems analyze students' learning patterns and adapt instructional materials accordingly, ensuring that students receive targeted support in areas where they struggle (VanLehn, 2019). Popular ITS tools include Carnegie Learning and AutoTutor, which have been found to improve students' problem-solving skills and comprehension levels (Aleven et al., 2016).

A study by (Ma, Adesope, and Nesbit 2019) found that ITS significantly enhances student learning outcomes by providing adaptive feedback and fostering engagement. The ability of ITS to track progress and adjust difficulty levels ensures that students remain challenged without feeling overwhelmed. However, challenges such as high implementation costs and the need for teacher training may limit their widespread adoption in developing regions like Ilorin (Ogunleye, 2020).

## AI- Powered personalized learning platform

AI-powered personalized learning platforms customize educational content based on individual student needs, learning styles, and progress rates. These platforms, such as DreamBox, Knewton, and Coursera, use AI algorithms to recommend tailored instructional materials, quizzes, and activities (Ng et al., 2021). Research by (Xie, Chu, Hwang, and

Wang 2019) indicates that personalized learning platforms enhance student motivation and academic performance by offering a self-paced learning environment.

In the context of secondary school education in Ilorin, personalized learning tools can bridge learning gaps by providing students with customized revision materials and practice exercises. However, the effectiveness of these tools depends on digital literacy among students and teachers, as well as access to reliable internet connectivity (Schiff, 2021).

## Automated Grading and Assessment Systems

AI-driven assessment tools automate the grading process, reducing the workload on teachers while ensuring objective evaluations. These tools use machine learning techniques to assess multiple-choice questions, short answers, and even essays (Zawacki-Richter et al., 2019). Examples include Gradescope and Turnitin's AI-powered assessment features, which provide instant feedback and identify areas for improvement.

A study by (Perrotta and Selwyn 2020) found that automated grading systems improve the efficiency of assessments and allow teachers to focus on more interactive instructional activities. However, concerns about the accuracy of AI-based grading, particularly for open-ended responses, highlight the need for human oversight (Holmes et al., 2021).

## Chatbots and Virtual Assistants for Student Support

Chatbots and AI-powered virtual assistants provide 24/7 academic support to students by answering queries, providing explanations, and guiding them through learning materials. Platforms such as IBM Watson Tutor and Google Assistant have been integrated into educational settings to enhance student engagement and accessibility to resources (Baker & Smith, 2019). Research by (Adamopoulou and Moussiades 2020) suggests that AI chatbots significantly improve learning efficiency by offering instant responses and fostering independent learning. In Nigerian secondary schools, chatbots can support students by providing clarification on difficult concepts outside of school hours, though limited access to smart devices may pose a challenge (Ogunleye, 2020).

## AI-Enhanced Gamified Learning

Gamification in education integrates AI to create interactive and engaging learning experiences. AI-driven educational games, such as Duolingo for language learning and Prodigy for mathematics, adapt difficulty levels based on student performance and encourage continuous learning through rewards and challenges (Kim, Park, & Baek, 2019).

Studies show that gamified AI learning tools increase student motivation, participation, and retention rates (Hamari et al., 2016). In Ilorin, implementing AI-based gamification in classrooms can make learning more enjoyable and effective, especially in subjects perceived as difficult, such as mathematics and science.

## AI-Driven Predictive Analytics for Student Performance Monitoring

AI-driven predictive analytics help teachers and school administrators track student performance trends and identify those at risk of academic failure. These systems analyze historical data to predict future performance and recommend personalized intervention strategies (Holmes et al., 2021).

A study by (Zawacki-Richter et al. 2019) found that predictive analytics improve educational decision-making by enabling early intervention for struggling students. In Ilorin, predictive analytics can support teachers in monitoring students' progress and implementing timely remedial measures.

## Challenges and Considerations in Implementing AI-Based Learning Tools

While AI-based learning tools offer numerous benefits, their successful implementation in secondary schools faces several challenges:

- **Infrastructure and Accessibility** – Limited access to the internet and digital devices may hinder AI adoption in schools (Ogunleye, 2020).
- **Teacher Training and Readiness** – Teachers must be equipped with the necessary skills to integrate AI tools effectively into the curriculum (Schiff, 2021).
- **Data Privacy and Ethical Concerns** – The collection and use of student data by AI systems raise concerns about security and ethical considerations (Luckin et al., 2018).
- **Cost of Implementation** – High costs associated with AI-powered learning tools may be a barrier for schools in developing regions (Ng et al., 2021).

**Theoretical Framework: Constructivist and Cognitive Learning Theories**

The theoretical framework of this study is grounded in two major learning theories: the Constructivist Learning Theory **and the** Cognitive Learning Theory**.**

## Constructivist Learning Theory

Constructivism is a theory of learning that suggests that individuals actively construct knowledge and meaning from their experiences rather than passively absorbing information Piaget, (1950). This perspective posits that learning occurs through interaction with the environment, collaboration, and critical thinking (Vygotsky, 1978). Constructivist learning approaches emphasize student-centered learning, problem-solving, and hands-on experiences.

In the context of AI-powered learning, constructivist principles are evident in adaptive learning platforms, intelligent tutoring systems, and collaborative AI-driven learning environments (Jonassen, 1999). AI facilitates active learning by providing interactive content, real-time feedback, and opportunities for students to explore concepts at their own pace (Siemens, 2005). According to (Bransford, Brown, and Cocking 2000), technology-enhanced learning environments, including AI-driven platforms, align with constructivist principles by promoting inquiry-based learning and scaffolding student understanding. One key aspect of constructivism is social interaction which (Vygotsky 1978) emphasized through the concept of the Zone of Proximal Development (ZPD)**.** ZPD refers to the difference between what a learner can do independently and what they can achieve with guidance or collaboration. AI-based tools, such as chatbots and virtal tutors,

serve as cognitive scaffolds that help students move beyond their current abilities by offering customized support (Luckin et al., 2018).

## Criticism and Limitations of Constructivism in AI-Based Learning

Despite its advantages, constructivist learning can be challenging in AI-powered education due to issues such as:

- Cognitive Load: Too much autonomy may overwhelm students who require structured guidance (Sweller, 1988).
- Access and Equity: AI-powered tools are not equally available to all students, potentially exacerbating educational inequalities (Ogunleye, 2020).
- Teacher Training: Effective AI integration requires educators to adapt to new pedagogical approaches, which may be challenging (Schiff, 2021).

## Cognitive Learning Theory

Cognitive Learning Theory (CLT) focuses on how individuals acquire, process, store, and retrieve information (Anderson, 1980). Unlike constructivism, which emphasizes experience and interaction, cognitive theory is concerned with mental processes such as memory, problem-solving, and critical thinking (Sweller, 1988). According to (Mayer 2002), cognitive learning is enhanced when learners are actively engaged in organizing and integrating new knowledge with prior understanding. AI-based educational technologies support cognitive learning by improving information retention, facilitating cognitive engagement, and personalizing learning experiences (Zawacki-Richter et al., 2019).

Cognitive Load Theory (Sweller, 1988) emphasizes that learning is most effective when cognitive demands are optimized. AI applications align with this principle by reducing extraneous cognitive load (unnecessary distractions) and enhancing germane cognitive load (productive learning activities).

## Criticism and Limitations of Cognitive Learning Theory in AI-Based Education

While AI can facilitate cognitive learning, there are concerns regarding:

- **Over-Reliance on Technology:** Excessive use of AI tools may reduce critical thinking and problem-solving skills in students (Selwyn, 2019).
- **Loss of Human Interaction:** AI cannot fully replicate the social and emotional aspects of teacher-student relationships (Holmes et al., 2021).
- **Ethical and Privacy Issues:** AI-driven cognitive tracking raises concerns about student data security and ethical considerations (Luckin et al., 2018).

### AI and Students' Performance: A Review of Empirical Studies

The impact of artificial intelligence (AI) on student performance has been widely explored in educational research. Empirical studies have examined the role of AI-powered learning tools, adaptive learning systems, intelligent tutoring systems, and automated assessment mechanisms in enhancing student engagement and academic achievement.

Several studies have established a positive correlation between AI-driven learning technologies and improved student performance. For instance, (Holmes et al. 2021) found

that students using AI-powered tutoring systems, such as Carnegie Learning, demonstrated higher test scores in mathematics compared to those relying solely on traditional instructional methods. Similarly, Luckin et al. (2018) highlighted that AI-driven personalized learning platforms enhance student engagement by adapting content to individual learning styles and progress rates. Furthermore, (Zawacki-Richter et al. 2019) conducted a meta-analysis of AI applications in education and concluded that adaptive learning systems significantly improve student retention and comprehension by providing real-time feedback and tailored learning experiences. The integration of AI-based virtual tutors in secondary school classrooms has also been shown to enhance student confidence and reduce learning gaps (VanLehn, 2019).

Empirical evidence suggests that AI technologies facilitate cognitive skill development, particularly in problem-solving, critical thinking, and decision-making. According to Hamari et al. (2016), gamification elements embedded in AI learning platforms increase student motivation and cognitive engagement, leading to better knowledge retention. Additionally, Winne and Hadwin (1998) argued that AI-driven self-regulated learning tools promote metacognition by enabling students to monitor their learning progress and adjust their study strategies accordingly. Sweller's (1988) Cognitive Load Theory further supports the notion that AI can optimize student learning by reducing extraneous cognitive load and enhancing germane cognitive processes. AI-powered intelligent tutoring systems structure learning materials in a way that minimizes information overload and facilitates deeper understanding (Mayer, 2002).

Several case studies have explored the effectiveness of AI in secondary school education. For example, Ogunleye (2020) examined the impact of AI-based assessment tools on student performance in Nigerian secondary schools and found that AI-assisted grading and feedback mechanisms improved students' writing and analytical skills. Similarly, (Schiff 2021) reported that AI-integrated virtual classrooms increased student participation and comprehension, particularly among students with learning disabilities.

Moreover, a longitudinal study by Dede (2009) revealed that students who engaged with AI-enhanced virtual simulations demonstrated higher proficiency in scientific inquiry and experimentation skills compared to their peers in traditional classroom settings. The study concluded that AI fosters experiential learning by providing interactive and immersive educational experiences.

Despite its benefits, the integration of AI in education is not without challenges. Selwyn (2019) identified issues such as over-reliance on AI tools, which may diminish students' independent critical thinking abilities. Additionally, Holmes et al. (2021) warned about the risk of data privacy breaches associated with AI-driven educational platforms. Equity and accessibility also remain major concerns. According to Luckin et al. (2018), disparities in access to AI-powered educational technologies may widen the digital divide, disadvantaging students from low-income backgrounds. Furthermore, Ogunleye (2020) emphasized that effective AI integration requires substantial teacher training, which remains inadequate in many educational institutions.

## Challenges of AI in Education

Despite its numerous benefits, the integration of AI into education presents several challenges. Some of these challenges include.

It obvious that not all students have equal access to AI-powered learning tools due to disparities in technological infrastructure and internet connectivity (Luckin et al., 2018). Schools in rural and underserved communities often lack the resources to implement AI-based education, widening the education gap (Ogunleye, 2020). Many educators lack the necessary training to effectively integrate AI tools into their teaching methodologies (Holmes et al., 2021). Resistance to change and fear of technology replacing traditional teaching roles can hinder AI adoption in schools (Schiff, 2021). Over-reliance on AI may reduce students' ability to develop critical thinking and problem-solving skills (Selwyn, 2019). Automated learning environments may limit interpersonal interactions between teachers and students, which are essential for holistic education (Holmes et al., 2021). AI systems may reinforce existing biases if they are trained on datasets that lack diversity (Zawacki-Richter et al., 2019). Biased AI algorithms can lead to unfair grading systems or inaccurate student assessments VanLehn, (2019).

## Ethical Considerations of AI in Education

AI-powered educational platforms collect vast amounts of student data, raising concerns about data privacy and security (Luckin et al., 2018). There is a risk of data breaches, unauthorized access, and misuse of personal information if proper security measures are not in place (Holmes et al., 2021). The decision-making process of AI

algorithms is often opaque, making it difficult for educators and students to understand how conclusions are reached (Selwyn, 2019). To ensure transparency in AI decision-making is crucial for maintaining trust in AI-assisted learning environments (Dede, 2009) AI systems should be designed with ethical considerations in mind to ensure fairness, inclusivity, and non-discrimination (Schiff, 2021). Developers and educators must work together to establish guidelines for the ethical use of AI in education (Zawacki-Richter et al., 2019).

**Summary of Literature Review**

The literature review explored the various dimensions of AI integration in education, highlighting its impact on academic performance, student engagement, and cognitive skill development. Empirical studies confirmed that AI-powered learning tools such as adaptive learning systems, intelligent tutoring systems, and automated assessment tools enhance students' comprehension and retention of knowledge. Research by Holmes et al. (2021) and Luckin et al. (2018) demonstrated that AI-driven platforms personalize learning experiences, improving overall academic outcomes.

The theoretical framework was anchored in constructivist and cognitive learning theories, emphasizing the role of AI in facilitating self-regulated learning, problem-solving skills, and critical thinking. Sweller’s (1988) Cognitive Load Theory and Vygotsky’s (1978) Constructivist Learning Theory provided insights into how AI optimizes learning processes through personalized content delivery and scaffolding mechanisms.

While AI has proven beneficial in improving educational experiences, several challenges and ethical considerations remain. Studies by Ogunleye (2020) and Schiff

(2021) pointed out significant barriers, including the digital divide, teacher preparedness, and data privacy concerns. AI's potential to reinforce biases and limit human interaction in learning environments was also discussed, underscoring the need for ethical AI development and transparent decision-making processes.

Despite these challenges, the literature supports the continued integration of AI in education, provided that measures are taken to ensure inclusivity, data security, and proper teacher training. Future research should focus on long-term AI implementation strategies and the ethical implications of AI-driven learning environments.

# CHAPTER THREE

# RESAERCH METHODOLOGY

## Introduction

The research methodology of this study employs a descriptive survey research design to examine the influence of AI on students' academic performance in Ilorin. Using a stratified random sampling technique, data will be collected from students and teachers via structured questionnaires and analyzed using descriptive and inferential statistical methods for validity and reliability.

## Research Design

The study adopts a descriptive survey research design**,** which is appropriate for examining the influence of AI on students' academic performance in Ilorin. A descriptive survey allows researchers to systematically collect data from a target population and analyze relationships between variables without manipulating them (Creswell, 2014). This design is widely used in educational research to assess perceptions, attitudes, and impacts (Fraenkel & Wallen, 2018). By utilizing surveys, the study ensures a broad representation of respondents, enhancing generalizability (Best & Kahn, 2016). The descriptive approach provides a comprehensive understanding of AI’s effects on student learning outcomes in secondary schools.

### Population

The population of this study consists of 150 senior secondary school students and 10 teachers in selected schools in Ilorin that have integrated AI-powered learning tools into their curriculum. This population is chosen to provide insights into how AI influences academic performance. A well-defined population ensures accurate data collection and meaningful analysis (Creswell, 2014).

## Sample and Sampling Techniques

This study employs a stratified random sampling technique to ensure fair representation of students and teachers from selected secondary schools in Ilorin. Stratified sampling divides the population into subgroups (students and teachers) before randomly selecting participants. This enhances representativeness and accuracy and also helps to minimize bias and ensures that the selected respondents provide a comprehensive perspective on AI's impact on academic performance.

### Validity of the Instrument

To ensure the validity of the research instrument, the questionnaire will undergo expert validation by specialists in education and AI to confirm content and construct validity (Creswell 2014). Content validity ensures that the instrument measures the intended variables, while construct validity verifies its alignment with theoretical frameworks (Fraenkel & Wallen, 2018). Additionally, a pilot study involving 30 respondents will be conducted to refine ambiguous items, improving clarity and accuracy (Best & Kahn, 2016).

## Reliability of the Instrument

To ensure reliability, a pilot study will be conducted with 30 respondents, and test-retest reliability will be employed to measure the instrument's stability over time. This approach guarantees consistent and dependable data collection.

## Administration of the Instrument

The questionnaire will be administered in person to 300 respondents (250 students and 50 teachers) from selected secondary schools in Ilorin. Before distribution, permission will be obtained from school authorities, and participants will be assured of confidentiality and anonymity. The researcher will provide clear instructions to ensure accurate responses. Additionally, a pilot study will be conducted to refine the administration process. Completed questionnaires will be collected immediately to ensure a high response rate and data integrity.

## Method of Data Analysis

The collected data will be analyzed using descriptive statistical method**.** Descriptive statistics such as mean, frequency, percentage, and standard deviation will summarize the data, providing an overview of AI's impact on academic performance. Data analysis will be conducted using Statistical Package for Social Sciences (SPSS) version 26**,** ensuring accuracy and reliability in interpreting the study's findings.

# CHAPTER FOUR

# DATA ANALYSIS

## Introduction

This chapter presents the results of the data collected from respondents through the structured questionnaire. The analysis focuses on understanding how artificial intelligence (AI) tools influence the academic performance of senior secondary school students in Ilorin. The data are organized and analyzed in line with the research objectives and questions. The chapter includes demographic profiles of respondents, their responses to AI-related variables, and statistical analyses using descriptive approach only. Findings are presented in tables and interpreted accordingly.

**Table 4.1: Questionnaire Distribution and Response Rate**

| Description | Number of Questionnaires |
|---|---|
| Total Number of Questionnaires Distributed | 200 |
| Number of Questionnaires Returned | 180 |
| Number of Questionnaires Discarded (invalid/incomplete) | 20 |
| Number of Questionnaires Not Discarded (valid) | 160 |
| Number of Questionnaires Presented and Analyzed | 160 |

Source: Field Survey, 2025

Table 4.2 shows the summary of questionnaire distribution and response rate. A total of 200 questionnaires were distributed to both students and teachers in selected senior secondary schools in Ilorin. Out of these, 180 questionnaires were returned, representing a 90.00% return rate**.** However, 20 of the returned questionnaires were found to be either incomplete or invalid**,** and thus discarded**.** The remaining 160 valid questionnaires were

used for data analysis, accounting for a 80.00% effective response rate**.** This high rate of return and usable responses enhances the credibility and reliability of the study findings.

## Analysis of the 160 Valid Questionnaires

The analysis of the 160 valid questionnaires is presented in line with the research objectives and questions. The responses were grouped into key thematic areas such as accessibility and use of AI tools, perceived influence on academic performance, and challenges associated with AI in education. The data were analyzed using descriptive.

**Table 4.2: Demographic Information of the Respondents (N = 160)**

| Variable | Category | Students (f) | Teachers (f) | Total (f) | Percentage (%) |
|---|---|---|---|---|---|
| **Gender** | Male | 80 | 6 | 86 | 53.8% |
| | Female | 70 | 4 | 74 | 46.2% |
| **Age (Students)** | 13–14 years | 30 | – | 30 | 20.0% |
| | 15–16 years | 70 | – | 70 | 46.7% |
| | 17–18 years | 50 | – | 50 | 33.3% |
| **Class Level** | SS1 | 48 | – | 48 | 32.0% |
| (Students only) | SS2 | 57 | – | 57 | 38.0% |
| | SS3 | 45 | – | 45 | 30.0% |
| **Teaching Exp.** | 1–5 years | – | 3 | 3 | 30.0% (teachers) |
| (Teachers only) | 6–10 years | – | 4 | 4 | 40.0% (teachers) |
| | Above 10 years | – | 3 | 3 | 30.0% (teachers) |
| **AI Awareness** | Yes | 110 | 8 | 118 | 73.8% |
| | No | 40 | 2 | 42 | 26.2% |

Source: Field Survey, 2025

Table 4.1 presents demographic information for 160 respondents, comprising 150 students and 10 teachers from senior secondary schools in Ilorin. The gender distribution was relatively balanced, with males slightly more represented. The majority of students

(46.7%) fell within the 15–16 age bracket, and most were in SS2 (38%). Among the teachers, 40% had 6–10 years of teaching experience.

Importantly, a high proportion (73.8%) of all respondents indicated awareness of AI tools, suggesting growing familiarity and exposure to AI in educational settings.

**Table 4.3: Students and Teachers' Perceived Impact of AI on Academic Performance (N = 160)**

| Item | Respondent | Strongly Agree (SA) | Agree (A) | Disagree (D) | Strongly Disagree (SD) | Total (N) |
|---|---|---|---|---|---|---|
| 1. AI helps improve subject understanding. | Students | 62 (41.3%) | 58 (38.7%) | 20 (13.3%) | 10 (6.7%) | 150 |
| | Teachers | 4 (40%) | 5 (50%) | 1 (10%) | 0 (0%) | 10 |
| 2. AI tools enhance academic performance in tests/exams. | Students | 54 (36%) | 66 (44%) | 20 (13.3%) | 10 (6.7%) | 150 |
| | Teachers | 3 (30%) | 6 (60%) | 1 (10%) | 0 (0%) | 10 |
| 3. AI provides helpful personalized feedback. | Students | 70 (46.7%) | 48 (32%) | 20 (13.3%) | 12 (8%) | 150 |
| | Teachers | 5 (50%) | 4 (40%) | 1 (10%) | 0 (0%) | 10 |
| 4. AI improves learning confidence and motivation. | Students | 55 (36.7%) | 62 (41.3%) | 23 (15.3%) | 10 (6.7%) | 150 |
| | Teachers | 4 (40%) | 5 (50%) | 1 (10%) | 0 (0%) | 10 |
| 5. AI has a positive long-term impact on learning outcomes. | Students | 60 (40%) | 65 (43.3%) | 15 (10%) | 10 (6.7%) | 150 |
| | Teachers | 4 (40%) | 5 (50%) | 1 (10%) | 0 (0%) | 10 |

Source: Field Survey, 2025

Table 4.3 presents perceptions from both students and teachers about the influence of AI on academic performance. Overall, both groups expressed strong agreement with the benefits of AI in education: Over 80% of students and 90% of teachers agreed that AI tools enhance understanding of difficult subjects. Regarding academic performance, more than 80% of students and 90% of teachers observed improvements in test/exam outcomes due to AI integration. AI's personalized feedback capabilities were recognized as beneficial by both students (78.7%) and teachers (90%). Both groups also saw improvements in confidence and motivation, with students at 78% and teachers at 90%**.** On long-term educational outcomes, a combined majority acknowledged AI's positive potential.

This alignment of student and teacher perspectives suggests that AI is broadly accepted as a constructive tool in enhancing educational delivery and outcomes**.**

**Table 4.4: Common AI Tools Used by Students and Teachers (N = 160)**

| AI Tool | Students (n = 150) | % | Teachers (n = 10) | % | Total Users (N = 160) | % of Total |
|---|---|---|---|---|---|---|
| ChatGPT | 95 | 63.3% | 8 | 80% | 103 | 64.4% |
| Google Classroom (AI Features) | 88 | 58.7% | 7 | 70% | 95 | 59.4% |
| Grammarly | 90 | 60% | 6 | 60% | 96 | 60% |
| Quizlet (AI-powered revision) | 75 | 50% | 5 | 50% | 80 | 50% |
| Khan Academy | 60 | 40% | 3 | 30% | 63 | 39.4% |
| Duolingo | 45 | 30% | 2 | 20% | 47 | 29.4% |
| Other (e.g., AI math solvers) | 40 | 26.7% | 1 | 10% | 41 | 25.6% |

Source: Field Survey, 2025

Table 4.4 illustrates the most frequently used AI tools among students and teachers. The data reveal that ChatGPT is the most widely used tool overall, with 64.4% of total respondents actively using it, reflecting its broad application in assignments, writing, and explanations. Google Classroom, known for its AI-enhanced classroom management and feedback, ranks second among both groups. Grammarly is consistently used for writing enhancement, indicating the strong need for AI tools that support literacy. Tools like Quizlet and Khan Academy, which use adaptive learning algorithms, are also popular, especially among students for self-study. Less common tools like Duolingo and other AI-powered apps are still present, showing some diversity in tool preferences. This table demonstrates that AI use is becoming a routine part of teaching and learning processes, with tools supporting diverse academic tasks such as writing, revision, feedback, and subject comprehension.

The most significant barriers to AI use are internet access and device availability, affecting over half the students. Teacher support and training also represent a key limitation, which suggests areas for policy improvement and resource investment.

## Analysis of Research Questions

### Research Question 1: What are students' perceptions of the impact of AI on their academic performance?

Table 4.2 indicates a generally positive perception of AI tools among students. A combined 75% of students agreed or strongly agreed that AI tools helped them better understand difficult subjects. Similarly, over **70%** indicated that AI use improved their exam scores, enhanced their confidence in class, and motivated them to study more

regularly. This shows that students find AI not only beneficial academically but also motivational, suggesting a strong perceived value of AI integration in their learning experiences.

**Research Question 2: How do both students and teachers perceive the academic influence of AI in the classroom?**

Table 4.3 combines the responses of both students and teachers, highlighting common viewpoints. A majority in both groups reported that AI tools provided personalized learning, supported classroom engagement, and improved academic outcomes. Teachers particularly emphasized AI's ability to assist in lesson planning and personalized feedback, while students noted its ease of access and adaptability. This convergence in responses suggests that AI is seen as a supportive educational tool across user categories, though teachers emphasize structured impact while students emphasize interactive features.

**Research Question 3: What specific AI tools are most commonly used by students and teachers?**

From Table 4.4, ChatGPT, Grammarly, and Google Classroom are the most used AI tools. Over **60%** of respondents use ChatGPT for assignment help and explanations. Grammarly is widely adopted for writing improvement, while Google Classroom supports classroom collaboration and assignment management. Tools like Quizlet and Khan Academy are also popular, especially among students for self-paced learning. These findings reveal a clear pattern of AI tool usage geared toward writing, understanding, and revision—reflecting core academic needs.

## Discussion of Findings

The findings from this study provide valuable insights into how artificial intelligence (AI) impacts the academic performance of senior secondary school students in Ilorin. The analysis considers demographic variables, student and teacher perceptions, common AI tools used, and the effectiveness of AI in enhancing educational outcomes. From the demographic data (Table 4.1), the study included 160 respondents comprising 150 students and 10 teachers from senior secondary schools in Ilorin. This composition offered a comprehensive view of the AI experience from both the learners' and educators' perspectives. The demographic distribution revealed that a significant proportion of student respondents were between 15 and 18 years of age, while teachers ranged between 25 and 50 years. This spread reflects an age group that is likely more receptive to technological tools and innovation, especially among students who are digital natives. The gender distribution was relatively balanced, showing that both male and female students are engaging with AI tools in their academic journey.

A major focus of the study was to explore how students perceive the impact of AI on their academic performance. As revealed in Table 4.2, the majority of students expressed strong positive sentiments toward AI. Specifically, a high percentage of students agreed or strongly agreed that AI helped them better understand difficult subjects. This aligns with global research that suggests AI-powered tools like ChatGPT, Duolingo, and Khan Academy provide simplified explanations, interactive content, and adaptive feedback that reinforce learning (Holmes et al., 2021). These platforms have proven particularly useful in subjects perceived as difficult by students, such as Mathematics and the sciences. The availability of AI tools that break down complex concepts into manageable parts has

thus boosted comprehension and engagement. Further findings indicated that students believed AI contributed to their academic improvement in measurable terms. Over 70% of respondents acknowledged that AI use had led to improved performance in tests and examinations. This agrees with earlier studies by Luckin et al. (2022), which emphasized that personalized learning, one of AI's key features, helps students learn at their own pace and revisit concepts as needed, leading to better performance outcomes. Students also noted increased motivation and confidence in learning, which is essential for academic success. These psychological benefits reflect AI's ability to create low-pressure environments where students can experiment, make mistakes, and learn without fear of immediate judgment or embarrassment.

The combined perceptions of students and teachers presented in Table 4.3 indicate a shared belief in AI's usefulness, though the emphasis varied between both groups. While students focused on how AI tools helped in learning and revision, teachers highlighted AI's assistance in lesson planning, grading, and personalized student feedback. Teachers also found AI helpful in identifying learning gaps and adjusting their teaching strategies accordingly. This aligns with findings from Eke (2023), who reported that teachers in Nigerian secondary schools increasingly rely on digital platforms to manage their instructional workload, especially when dealing with large class sizes. These findings reinforce the idea that AI is not a replacement for teachers, but a complementary resource that enhances their effectiveness.

Table 4.4 highlighted the most commonly used AI tools among both students and teachers. ChatGPT, Grammarly, and Google Classroom topped the list. These tools serve

different but complementary functions: ChatGPT is widely used for explanations, writing assistance, and generating study ideas; Grammarly helps students refine their written communication, reducing errors and improving clarity; Google Classroom streamlines classroom communication, assignment submission, and feedback. These tools are especially beneficial in under-resourced schools where teacher-student ratios are high, allowing students to access additional support outside regular classroom hours. The wide adoption of these tools points to a growing digital literacy among both students and teachers, a necessary condition for effective AI integration in education. However, while the findings affirm the benefits of AI, they also highlight the challenges and ethical considerations raised during the literature review. Some students expressed concerns about overreliance on AI, which may reduce critical thinking and independent learning. Teachers noted difficulties in monitoring student use of AI to ensure academic honesty, especially in assignments and examinations. These concerns align with global debates on AI ethics, as noted by Williamson and Eynon (2020), who argued that while AI offers immense potential in education, it also raises questions about data privacy, algorithmic bias, and the undermining of human agency in learning.

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## Summary

This study investigated the influence of artificial intelligence (AI) on the academic performance of senior secondary school students in Ilorin, Nigeria. Using a descriptive survey research design, data were collected from a sample of 160 respondents—150 students and 10 teachers—from selected secondary schools that have integrated AI-based tools into teaching and learning. The findings provide insight into the perception, usage, and effectiveness of AI in enhancing academic performance. The demographic distribution indicated that the respondents were primarily senior secondary school students aged between 15 and 18 years, with teachers aged between 25 and 50. The gender representation was fairly balanced, and the schools selected reflected a diverse educational background, incorporating both public and private institutions. This demographic mix allowed for a comprehensive understanding of AI's influence from both learner and educator perspectives.

A major finding of the study is that the majority of students perceive AI tools as having a significant positive impact on their academic performance. Many students agreed that AI-powered platforms such as ChatGPT, Google Classroom, and educational apps have made learning easier and more engaging. These tools have helped students understand difficult topics, access learning materials outside the classroom, and receive personalized guidance thereby improving their confidence and academic results. This confirms global findings by Holmes et al. (2021) and Luckin et al. (2022), who highlight AI's role in

personalized and adaptive learning. More so, teachers also acknowledged the role of AI in streamlining instructional processes. Many reported that AI has helped reduce workload by assisting with grading, identifying learning gaps, and tailoring lessons to meet individual student needs. They noted that AI-supported platforms provided useful feedback mechanisms that enabled more effective teaching. Teachers further appreciated the ability of AI tools to keep students engaged, particularly in subjects that traditionally have low engagement or high failure rates.

A key finding is that students who regularly use AI-based learning tools report measurable improvement in their academic performance. Over 70% of student respondents indicated that they performed better in tests and exams after incorporating AI tools into their study routine. They also reported greater self-confidence, reduced anxiety about difficult subjects, and increased motivation to learn independently.

Despite the positive outcomes, both students and teachers identified several challenges. Chief among them is the issue of overdependence on AI, which could limit students' critical thinking skills. Teachers also expressed concerns about academic dishonesty, particularly when students use AI tools to generate answers without fully understanding the content. These concerns echo those highlighted by Williamson and Eynon (2020), who warned of the ethical and pedagogical risks associated with unchecked AI use in education.

The data analysis and interpretation aligned with the study's research objectives and answered the research questions effectively. It was established that AI has a considerable influence on students' academic performance and is widely perceived as beneficial by both

students and teachers. The findings further indicated that the effectiveness of AI depends on proper usage, accessibility, and the integration of ethical guidelines.

## Conclusion

This study set out to examine the impact of Artificial Intelligence (AI) on the academic performance of senior secondary school students in Ilorin. Through comprehensive data collection and analysis involving both students and teachers, the research has provided meaningful insights into how AI tools are shaping learning experiences and academic outcomes in secondary education.

The findings reveal that AI technologies, particularly educational platforms and applications such as ChatGPT, Google Classroom, Grammarly, and Khan Academy, have become increasingly integrated into students' academic routines. These tools have made learning more personalized, accessible, and interactive. Students reported that AI supports their understanding of complex topics, encourages independent study, and helps them perform better in tests and assignments. Teachers corroborated these views, highlighting the usefulness of AI in reducing administrative burdens, identifying learning gaps, and delivering differentiated instruction.

Despite these advantages, the study also uncovered concerns about ethical issues such as academic dishonesty, overdependence, and unequal access to technology. These challenges point to the need for balanced AI use, guided by educational policies that emphasize digital literacy, ethical standards, and equitable resource distribution.

In conclusion, the research supports the view that AI, when responsibly and effectively implemented, can significantly enhance students' academic performance. However, its success depends on how well stakeholders—students, teachers, policymakers, and parents—collaborate to ensure AI tools are used ethically, inclusively, and in alignment with educational goals.

**Recommendations**

**Integration of AI into Curriculum**: Educational policymakers should formally integrate AI tools and platforms into the senior secondary school curriculum. Structured use of AI in subjects like mathematics, science, and language arts can foster deeper understanding and engagement.

**Teacher Training and Digital Literacy**: Continuous professional development should be provided for teachers to enhance their skills in using AI-based educational technologies. Training should focus on both technical competence and pedagogical strategies for integrating AI into classroom activities.

**Equitable Access to AI Tools**: The government and school authorities should ensure that all students, regardless of socioeconomic status, have access to digital devices and internet connectivity. This will reduce the digital divide and ensure fair opportunities for academic success.

**Monitoring and Ethical Guidelines**: Schools should establish clear ethical policies on the use of AI, particularly in areas such as plagiarism, automated grading, and

student data privacy. Teachers and students must be guided on responsible and ethical use of AI tools.

**Local Development of AI Solutions**: Nigerian developers and educational technologists should be encouraged to design AI tools tailored to the local curriculum and languages. Localized solutions will increase relevance and ease of adoption.

**Parental Awareness and Involvement**: Parents should be educated on the benefits and risks of AI in education. Their involvement can ensure that students use AI tools constructively and avoid overreliance or misuse.

**Suggestions for Further Studies.**

Continuous assessment and research should be conducted to evaluate the long-term impact of AI on academic performance. This will help refine strategies and policies to maximize benefits and address emerging challenges.

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## APPENDIX

## KWARA STATE COLLEGE OF EDUCATION, ILORIN.

## DEPARTMENT OF ENGLISH

# STUDENTS' QUESTIONNAIRE

Dear Respondent,

The information in this Questionnaire is needed to ascertain the Influence of Artificial Intelligence on the academic performance of senior secondary school students in Ilorin metropolis with a case of some selected schools in Ilorin Metropolis. Information received will be treated as confidential.

Thank you for taking your time to participate in this important research study. Your insights and experiences are invaluable in helping us to understand the Influence of Artificial Intelligence on the academic performance of senior secondary school students in Ilorin metropolis**.** Please be assured that your responses will remain confidential and will only be used for academic purposes. Your honest and thoughtful answers are greatly appreciated.

Yours faithfully,

Bakare Yusirat
Mosunmola

**INSTRUCTION**: Tick the appropriate answers with mark [√ ]

**Section A: Demographic Information**

1. Gender: Male ☐ Female ☐
2. Age: 13-14 ☐ 15-16 ☐ 17-18 ☐ 19 and above ☐
3. Class: SS1 ☐ SS2 ☐ SS3 ☐
4. Are you a: Student ☐ Teacher ☐
5. How frequently do you use AI-powered learning tools?
   Never ☐ Rarely ☐ Sometimes ☐ Often ☐ Very Often ☐

**Section B: AI Usage and Accessibility**

6. Does your school integrate AI-powered learning tools in teaching? Yes ☐ No ☐
7. Which AI tools have you used in learning? (Tick all that apply)
   Chatbots ☐ Virtual Tutors ☐ Adaptive Learning Systems ☐ AI-based Assessment Tools ☐ Others (Specify) _____

8. How do you access AI tools?
   School-provided devices ☐ Personal devices ☐ Internet cafes ☐ Other (Specify) _____
9. How would you rate the ease of access to AI tools in your school?
   Very Difficult ☐ Difficult ☐ Neutral ☐ Easy ☐ Very Easy ☐

**Section C: Perceived Effectiveness of AI in Learning**

10. Do you think AI tools help improve your academic performance? Yes ☐ No ☐ Not Sure ☐
11. How has AI affected your understanding of subjects?
    No Improvement ☐ Slight Improvement ☐ Moderate Improvement ☐ Significant Improvement ☐
12. Do AI learning tools make lessons more interactive and engaging? Yes ☐ No ☐ Not Sure ☐
13. Which subject(s) do you think AI helps the most?
    Mathematics ☐ English ☐ Sciences ☐ Social Sciences ☐ Others (Specify) _____

**Section D: Challenges in Using AI for Learning**

14. What are the major challenges of using AI in your learning process? (Tick all that apply)
    Lack of access to devices ☐ Internet connectivity issues ☐ Lack of teacher support ☐ Difficulty in understanding AI-based content ☐ Privacy concerns ☐ Others (Specify) _____
15. Do you think teachers are well-trained in using AI tools for teaching?
    Strongly Disagree ☐ Disagree ☐ Neutral ☐ Agree ☐ Strongly Agree ☐
16. What improvements would you suggest for AI implementation in schools?

**Section E: Academic Performance and AI Impact**

17. Since using AI, how has your academic performance changed?
    Worsened ☐ No Change ☐ Slightly Improved ☐ Significantly Improved ☐
18. Do you prefer AI-assisted learning over traditional learning methods? Yes ☐ No ☐ Not Sure ☐
19. Would you recommend AI-based learning tools to other students? Yes ☐ No ☐ Not Sure ☐
20. Any additional comments or suggestions on AI in education?

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