ICONIC UNIVERSITY
OPEN, DISTANCE & E-LEARNING

# ICONIC OPEN UNIVERSITY

No. 1B , Gusai Road, Sokoto - Nigeria.

1st Virtual International Conference on ARTIFICIAL INTELLIGENCE (AI)

## THEME:

Artificial Intelligence (AI) and the Future of Academia; Leaving or Living the trend

# BOOK OF ABSTRACTS

**February 17 & 18, 2024**

Powered by:

ICONIC UNIVERSITY
OPEN, DISTANCE & E-LEARNING

SOKOTO STATE UNIVERSITY
SOKOTO
IT ALL BEGINS HERE

MINISTRY OF INNOVATION DIGITAL ECONOMY
SOKOTO STATE, NIGERIA

# Book of Abstracts

## First Virtual International Conference (VIC-2024)

February 17 & 18, 2024
Sokoto, Nigeria

Iconic Open University
No. 1B, Gusau Road, Sokoto
Sokoto State, Nigeria
info@iconicuniversity.edu.ng
+234 803 590 7892

**Book of Abstracts of the First Virtual International Conference, 2024**

## Editorial Board Members



ISBN: 978-978-59014-5-0
MRN Publishing, Damaturu, Yobe State, Nigeria



***Published by:***
Iconic Open University, Sokoto, Nigeria
No. B1, Gusau Road, Sokoto, Sokoto State, Nigeria
info@iconicuniversity.edu.ng
+234 803 590 7892

**Disclaimer**

The views, opinions, and content expressed in the abstracts included in this conference book are solely those of the respective authors and do not necessarily reflect the official policies or positions of the organisers, sponsors, or affiliated institutions of the conference.

The organisers have made every effort to ensure the accuracy of the information presented, but they do not assume any responsibility for errors, omissions, or discrepancies. Readers are encouraged to verify the information contained herein independently.

The inclusion of any specific content or mention of products, services, or organisations does not imply endorsement or recommendation by the conference organisers.

## Message from Dr. Shadi Sabeh, the Conference Chair and Vice Chancellor, Iconic Open University, Sokoto, Sokoto State

It gave me great pleasure when I welcomed you to the First Virtual International Conference on *Artificial Intelligence and the Future of Academia: Leaving or Living the Trend*. The experience we recorded for the turnout was itself as transformative and profound as Artificial Intelligence (AI) is to academia. We not only explored the dynamic and complex relationships between AI and academic practices but also pushed back the boundaries of networking and collaboration among academics and industry practitioners. This first in a series of conferences is dedicated to investigating the potential of AI to revolutionise teaching and learning, research methodologies, and institutional operations, while also critically addressing the opportunities and challenges that lie ahead.

Artificial Intelligence is rapidly shaping every aspect of our world, and academia is no exception. The application of AI within the educational sector has the power to enhance teaching strategies, improve research outcomes, and streamline administrative processes. However, this potential must be approached with a deep understanding of the ethical, social, and technological considerations that accompany such a shift. It is encouraging to observe that among the key topics explored at the conference include the ethical dilemmas of AI adoption, issues of data privacy, and the responsible development and use of AI technologies in academic settings.

The papers presented at the conference span a broad range of disciplines, offering invaluable perspectives into AI's diverse applications. These include discussions on how AI can drive business growth, enhance educational standards, and transform the teaching and learning of subjects such as mathematics. Several papers specifically focus on AI's role in improving academic research, facilitating student-teacher interactions, and integrating AI into educational systems across various levels. In addition, contributions examining AI's impact on sectors such as healthcare, library services, diagnostics, and agriculture further underscore the wide-reaching implications of this technology.

As we research into the challenges and opportunities presented by AI, we are reminded of the importance of fostering an academic community that is not only aware of the potential benefits but also equipped to navigate the complexities associated with its integration. It is our goal to equip participants with the knowledge and skills necessary to engage with the AI-driven academic world, ensuring that we can shape its development in ways that are both ethical and responsible.

I would like to extend our heartfelt appreciation to all participants for their invaluable contributions, which are pivotal to the success of this conference. Special thanks go to His Excellency, Dr. Ahmed Aliyu, the Executive Governor of Sokoto State, whose leadership and support have been instrumental. I also express our gratitude to Prof. Bashir Garba, Vice Chancellor of Sokoto State University, and Mr. Kashifu Inuwa Abdullahi, Director General of Director General, National Information Technology Development Agency (NITDA), for their presence and steadfast support.

Our deep thanks go to our distinguished keynote speaker, Prof. Isa Ali Ibrahim (Pantami), and Lead Presenter I, Assoc. Prof. Dr. Mohd Amiruddin Abd Rahman, whose insights have significantly enriched our discussions. We also extend our gratitude to Lead Presenter II, Asst. Prof. Dr. Yakubu Sani Wudil of the Department of Physics, King Fahad University of Petroleum and Minerals, Saudi Arabia, and Lead Presenter III, Dr. Nasir Daniya, Permanent Secretary of the Ministry of Innovation and Digital Economy, Sokoto State, Nigeria, for their invaluable contributions to the conference. Also, I would like to acknowledge the Management and Staff of our collaborating institutions,(i.e., Iconic Open University and Sokoto State University, and Ministry of Innovation and Digital Economy of Sokoto State), for their unwavering partnership in making this event a reality.

The conference *Book of Abstracts* serves as a crucial compilation of the innovative research, ideas, and discussions that have defined our gathering. It offers a glimpse into the transformative possibilities AI holds for academia and provides a platform for continued dialogue and exploration. This publication not only reflects the cutting-edge contributions of scholars and practitioners but also stands as a vital resource for future research and engagement in AI's evolving role within academia.

As we embark on this exciting journey together, I encourage you all to engage with the various perspectives and ideas shared throughout the conference. Let this event inspire us to rethink traditional academic paradigms, challenge existing boundaries, and embrace the innovative solutions that AI offers. Together, we can shape a future where AI is not just a trend, but a powerful tool for advancing knowledge and education in profound ways.

I look forward to the productive and thought-provoking discussions that await us in the next edition of the conference in 2025, *in sha Allah*.

**Dr. Shadi Sabeh**
Conference Chair and Vice Chancellor
Iconic Open University, Sokoto.

## Message from Prof. Bashir Garba, MFR, Vice Chancellor, Sokoto State University, Sokoto.

It is my pleasure to welcome you all to this ground-breaking First Virtual International Conference on Artificial Intelligence, jointly organised by Iconic Open University and Sokoto State University, andin partnership with the Sokoto State Government through its Ministry of Innovation and Digital Economy. This collaborative effort reflects our shared commitment to advancing knowledge in artificial intelligence (AI) and its implications for academia and beyond.

The theme, *Artificial Intelligence and the Future of Academia: Leaving or Living the Trend,* is timely and highly relevant. We are in an era where AI is reshaping how we live, work, and learn. AI is defined as the ability of a machine to exhibit human-like capabilities such as reasoning, learning, and creativity. It holds significant importance due to its potential to transform how we live, work, and engage in academic activities. In business, AI has been effectively utilised to automate tasks traditionally performed by humans, including customer service, fraud detection, and quality control. Moreover, AI is contributing to advancements across various industries such as healthcare, finance, education, and security. In many areas, AI can perform tasks more efficiently than humans, particularly in repetitive and detail-oriented processes. Experts predict that AI will enhance human capabilities and improve lives significantly over the next decade.

However, alongside these advancements come profound questions about what it means to be human, to exercise free will, and to remain productive in an AI-dominated world. This conference offers a platform for eminent scholars to educate us on these critical issues. I encourage all participants to explore both the opportunities and challenges AI presents to academia. Let us leverage the outcomes of these discussions to enrich our careers and contribute to societal development.

At Sokoto State University, we are committed to fostering research in AI. I am delighted to share that our institution is actively supporting initiatives in this field, aligning with global trends in innovation and technology. We are glad to partner with as many institutions as possible towards the advance of in this part of the world.

Let me also extend my gratitude to the Sokoto State Government, led by His Excellency Dr Ahmed Aliyu, FCNA, for its unwavering support of this conference and its investment in research and development in AI. This partnership underscores the importance of collaboration between academia,

government, and industry in addressing the challenges and opportunities of our time.

Thank you, and I wish you a productive and insightful conference.

**Prof. Bashir Garba,** MFR
Conference Co-Host
Vice-Chancellor
Sokoto State University, Sokoto

## Message from Alhaji Bashar Umaru Kwabo, Honourable Commissioner, Ministry of Innovation and Digital Economy, Sokoto State, Nigeria

In the name of Allah, the Most Gracious, the Most Merciful.

It gives me an exceptional honour and indelible privilege to co-host the first ever Virtual International Conference with the theme "*Artificial Intelligence and the Future of Academia: Leaving or Living the Trend*." It is with great enthusiasm and deep appreciation that I welcome all participants, including the distinguished keynote speaker, lead presenters, other speakers, and attendees from across the globe.

This collaboration between our two leading institutions of higher learning, Sokoto State University and Iconic Open University, alongside our Ministry, underscores the importance of harnessing collective intellectual resources to explore the transformative potential of artificial intelligence (AI). The virtual format of this conference exemplifies the practical application of technology and reflects our unwavering commitment to integrating information and communication technology (ICT) as a driver of progress for our people.

Allow me to acknowledge and commend the visionary leadership of His Excellency, the Executive Governor of Sokoto State, Dr Ahmad Aliyu, FCNA. His unwavering support and strategic prioritisation of ICT have positioned Sokoto State as a beacon in leveraging digital innovation for societal development. Under His Excellency's guidance, our state has embraced a forward-looking approach that aligns with global development frameworks such as the United Nations' Sustainable Development Goals (SDGs). His Excellency's dedication inspires confidence in our collective ability to embrace AI and digital innovation for the advancement of our people and society.

In furtherance of this vision, I appointed our Permanent Secretary, Dr Nasir Daniya, to serve as one of the lead speakers at this conference. Dr Daniya's participation is a testament to the calibre of expertise and dedication within our Ministry and our shared commitment to fostering intellectual discourse on AI. I am confident that the contributions of all speakers, particularly the lead presenters, will provide insightful perspectives on the theme of this conference and enrich our understanding of AI's implications for academia and beyond.

I would like to extend my profound gratitude to the keynote speaker, lead presenters, and other contributors for sharing their expertise and engaging with the complexities of AI as it pertains to Nigeria's development, the global economy, and the transformation of higher education. Your insights will

undoubtedly illuminate pathways for leveraging AI in a manner that benefits academia, our economy, and society at large.

To the organisers, I express my heartfelt appreciation for their diligent efforts in coordinating this world-class event. It is through your hard work and vision that we are gathered today to deliberate on this critical subject. I also extend my thanks to His Excellency, Dr Ahmad Aliyu, FCNA, for his steadfast support, which has been instrumental in enabling initiatives such as this.

Looking ahead, the Ministry of Innovation and Digital Economy reaffirms its commitment to fostering collaboration on AI and digital innovation with all interested parties, both locally and internationally. We recognise the importance of building partnerships that transcend geographical boundaries to accelerate knowledge-sharing and innovation. Sokoto State is open to forming alliances with like-minded individuals and institutions dedicated to advancing the frontiers of AI for the collective good of humanity.

In conclusion, I extend my sincere gratitude to all participants for being part of this historic conference. Together, we have the opportunity to shape the narrative on AI and its transformative impact on academia and society. May our discussions be fruitful and our resolutions impactful.

Thank you.

**Alhaji Bashar Umaru Kwabo**
Honourable Commissioner
Ministry of Innovation and Digital Economy
Sokoto State, Nigeria

## Conference Hosts

***Chief Host***
Dr. Shadi Sabeh
Vice-Chancellor
Iconic Open University, Sokoto, Nigeria

***Host***
Professor Bashir Garba
Vice-Chancellor
Sokoto State University, Sokoto, Nigeria

***Co-Host***
Hon. Bashar Umaru Kwabo
Honourable Commissioner
Ministry of Innovation and Digital Economy
Sokoto State, Nigeria

## Conference Organising Committee

## Conference Moderators

Dr. Shadi Sabeh
*Iconic Open University, Sokoto, Nigeria*

Dr. Anas Sanusi Gusau
*Iconic Open University, Sokoto, Nigeria*

Mr. Muhammad Sanusi
*Iconic Open University, Sokoto, Nigeria*

Dr. Bala Salisu
*Federal Polytechnic Damaturu, Nigeria*

Assoc. Prof. Dr. Amade Roberts Amana
*Kampala International University, Tanzania*

Mr. Muhammad Abdullahi
*Iconic Open University, Sokoto, Nigeria*

Dr. Gazali Anka
*Iconic Open University, Sokoto, Nigeria*

Dr. Murtala Marafa
*Sokoto State University, Sokoto, Nigeria*

Mr. Aliyu Musa
*Iconic Open University, Sokoto, Nigeria*

Mr. Audu Bello
*Usmanu Danfodiyo University, Sokoto, Nigeria*

Dr. Thompson Izuagie
*Sokoto State University, Sokoto, Nigeria*

Dr. Muhammad Kabeer Sulayman
*Universiti Putra Malaysia, Malaysia*

Dr. Zainab Abdulkarim
*Sokoto State University, Sokoto, Nigeria*

## Conference Moderators

Dr. Shadi Sabeh
*Iconic Open University, Sokoto, Nigeria*

Mr. Muhammad Sanusi
*Iconic Open University, Sokoto, Nigeria*

Dr. Bala Salisu
*Federal Polytechnic Damaturu, Nigeria*

Assoc. Prof. Dr. Amade Roberts Amana
*Kampala International University, Tanzania*

Mr. Muhammad Abdullahi
*Iconic Open University, Sokoto, Nigeria*

Dr. Gazali Anka
*Iconic Open University, Sokoto, Nigeria*

Dr. Murtala Marafa
*Sokoto State University, Sokoto, Nigeria*

Mr. Aliyu Musa
*Iconic Open University, Sokoto, Nigeria*

Mr. Audu Bello
*Usmanu Danfodiyo University, Sokoto, Nigeria*

Dr. Thompson Izuagie
*Sokoto State University, Sokoto, Nigeria*

Dr. Muhammad Kabeer Sulayman
*Universiti Putra Malaysia, Malaysia*

Dr. Zainab Abdulkarim
*Sokoto State University, Sokoto, Nigeria*

## Table of Contents

# Keynote Speaker: Artificial Intelligence and the Future of Academia: Leaving or Living the Trend

I extend my gratitude to the organisers of this conference for the privilege of serving as the keynote speaker at such a timely and significant event. The conference theme, "Artificial Intelligence and the Future of Academia: Leaving or Living the Trend," is highly relevant as we navigate the era of the Fourth Industrial Revolution (IR 4.0), where Artificial Intelligence (AI) plays an increasingly transformative role. This theme is particularly pertinent when considering the relatively slow pace at which Nigeria, especially in the northern region, is adapting to the technological advancements driving global economies.

Historically, Africa has been left behind during the first three phases of the industrial revolutions, from mechanisation to the advent of computers and automation. Today, as the majority of the world embraces the technologies defining IR 4.0—automation, interconnectivity, and cyber-physical systems—many African countries, including Nigeria, face significant challenges in scaling initiatives to achieve meaningful participation in these advancements. Addressing these challenges requires deliberate and sustained efforts, particularly in the academic sector, to position our institutions as key contributors to the AI-driven future we envision for Nigeria.

The industrial revolutions were built on proactive strategies and innovations. Similarly, proactivity remains essential for academia at individual, organisational, and institutional levels. It is against this backdrop that I eagerly anticipate the deliberations and discussions stemming from this conference, which will undoubtedly offer valuable insights into how AI can be harnessed to advance academic and societal progress.

AI can be defined as a machine, system, or software capable of simulating human reasoning, learning, and problem-solving abilities. Its integration into academic activities is not only important but inevitable. By complementing human capacities, AI significantly broadens the horizons of what is technically feasible. However, to fully realise the benefits of this ground-breaking technology, certain challenges must be addressed.

One of the primary challenges, especially in Nigeria, relates to the use of AI in academia. For instance, AI platforms like ChatGPT provide fast and seemingly accurate solutions but can inadvertently promote intellectual complacency among students and staff. Such practices risk undermining cognitive development and critical thinking skills. It is imperative that these

technologies are used judiciously—not as shortcuts to evade intellectual effort, but as tools to enhance and extend human capabilities.

Despite these challenges, I am optimistic about Africa's potential to catch up and even lead in AI development. While the continent was left behind in earlier industrial revolutions, promising progress is now being made. In Nigeria, for example, the establishment of the National Centre for Artificial Intelligence and Robotics (NCAIR) in Abuja is a significant milestone. NCAIR serves as a hub for innovation, research, and development in AI and robotics. A testament to the Centre's impact is the recent achievement of a Nigerian youth from Katsina State, who secured first place at the Gulf Information Technology Exhibition in Dubai.

In conclusion, the applications of AI are boundless, offering opportunities to revolutionise academia and other sectors. I urge all participants to engage thoughtfully with AI, leveraging its potential to enhance academic pursuits and contribute to societal development. I wish everyone a successful and productive conference.

Thank you.

**Prof. Isa Ali Ibrahim (Pantami)** CON, FCIIS, FBCS, FNCS
Professor of Cybersecurity
Former Minister of Communications and Digital Economy, Nigeria

## Lead Presenter I: AI and the Future of Teaching and Learning

I would like to begin by expressing my gratitude to the organisers of this First Virtual International Conference on Artificial Intelligence for providing me with the opportunity to deliver this presentation on such a prestigious international platform. I commend the collaboration between Iconic Open University, Sokoto State University, and the Sokoto State Ministry of Innovation and Digital Economy for their vision in hosting this timely conference. I also extend my heartfelt thanks to my institution, Universiti Putra Malaysia (UPM), for fostering an excellent research environment that has significantly contributed to the progress of our work in artificial intelligence. UPM warmly invites prospective postgraduate scholars with an interest in AI to join our dynamic research group, and we are equally open to collaborations and Memoranda of Understanding (MOUs) with institutions seeking to advance this critical field of study.

Artificial Intelligence (AI) and Machine Learning (ML) are pivotal in shaping the future of academia. AI refers to a suite of technologies designed to enable systems to reason, learn, and act autonomously in addressing complex problems. ML, as the underlying engine of AI, utilises algorithms that allow systems to analyse data, predict outcomes, and continuously improve performance. By learning from experience, ML equips AI systems with the ability to adapt and optimise their operations without the need for explicit programming.

The origins of AI can be traced back to the 1950s, with the creation of machines designed to replicate aspects of human cognition. In the 1980s, the field evolved with the advent of ML, which enabled systems to self-learn through tailored algorithms capable of making logical classifications, generating prompts, and making autonomous decisions. A further leap occurred in the 2010s with the development of Deep Learning (DL). DL employs multiple layers of neural networks to process vast datasets, leveraging the interconnected nature of modern digital systems. This innovation has been made possible by the proliferation of the Internet of Things (IoT), which generates massive amounts of data for DL systems to process and use in making highly informed decisions.

Generative AI, a cutting-edge development in the field, exemplifies the practical applications of these technologies. Tools such as ChatGPT, Gemini, and Meta AI utilise ML algorithms to create new content and assist users in exploring ideas, drafting text, and providing feedback. However, despite their utility, generative AI systems have inherent limitations. They lack human

judgment, contextual awareness, and personal insights, which restrict their ability to fully understand complex scenarios. Additionally, these systems are influenced by biases present in the training data, which can lead to skewed outputs. While generative AI offers significant support for intellectual activities, it cannot replace critical thinking, a cornerstone of human cognition. Moreover, generative AI tools are prone to errors, including the generation of inaccurate or fabricated information, highlighting the need for their judicious use.

In the context of education, AI is revolutionising teaching and learning practices. AI-powered dashboards are now used to monitor students' progress and employ predictive analytics for timely interventions in areas where learners face challenges. Personalised tutoring platforms, such as Malaysia's *Pandai*, cater to the diverse learning needs of large classes, offering tailored guidance that addresses individual capabilities. AI has significantly enhanced remote learning, allowing students from geographically remote or otherwise disadvantaged areas to access quality education.

Language diversity in education has also benefited from AI, with tools that enable the translation of learning materials into multiple native languages, removing traditional barriers to comprehension. Moreover, AI facilitates inclusive education for minority groups, such as the deaf, through applications like speech-to-text technology. These advancements ensure that education is more accessible, equitable, and inclusive, embodying the principle of education for all.

As we embrace the opportunities presented by AI in academia, it is imperative that educators and researchers approach these technologies with a critical and ethical mindset. AI should be utilised as a tool to complement human effort, fostering innovation and broadening the horizons of what is achievable in teaching and learning. I remain optimistic about the potential of AI to transform academia, making it more adaptive and inclusive for the challenges of the 21st century.

Thank you.

**Assoc. Prof. Dr. Mohd Amiruddin Abd Rahman**
Head, Computational Intelligence Research Group
Department of Physics, Universiti Putra Malaysi (UPM), Malaysia

## Lead Presenter II: Academic Research Using Artificial Intelligence

Ladies and gentlemen, distinguished guests, fellow researchers, and participants, it is an honour to address this esteemed audience on the transformative role of Artificial Intelligence (AI) in academic research. As we gather to discuss the intersection of AI and the future of academia, we must ask ourselves whether we are embracing the trend of AI or risking being left behind. Today, I will briefly look into the applications of AI, with a particular focus on Machine Learning (ML), to highlight its capacity to redefine academic research across disciplines.

AI, particularly Machine Learning, has redefined the possibilities of research by enabling predictions and insights that were previously unattainable through traditional methods. Unlike conventional techniques that rely on fixed models, ML adapts dynamically, uncovering patterns and relationships to solve complex problems. In physics, for instance, ML has become a powerful tool for data analysis, pattern recognition, and addressing challenges beyond the reach of classical approaches. This ability to evolve with data has made ML a cornerstone in modern academic research.

The applications of AI in academic research are vast and transformative, spanning multiple domains. In physics and materials science, ML is used to predict parameters that are difficult to determine experimentally, providing researchers with insights that save time and resources. Similarly, in healthcare, AI has revolutionised research in disease prediction, drug discovery, and personalised treatments, enabling critical advancements in medical science. Environmental research also benefits immensely from AI, where it analyses extensive datasets to improve climate modelling and natural disaster prediction. In education, AI fosters personalised learning experiences and predicts student performance, pushing innovation to new heights. Furthermore, AI supports agricultural research by predicting crop yields and managing pests, while cybersecurity applications strengthen research integrity and address concerns related to data privacy. These examples illustrate AI's far-reaching impact, helping to push the boundaries of academic discovery.

At its core, Machine Learning is divided into two key types: supervised learning and unsupervised learning. Supervised learning involves labelled datasets where inputs are paired with corresponding outputs, making it useful for tasks like classification and regression. For example, it can identify tumour types in medical imaging or predict future population trends. On the other hand, unsupervised learning works with unlabelled data to uncover hidden patterns, such as clustering social behaviours or grouping similar genetic sequences in

biology. These types of learning provide researchers with versatile tools to address diverse challenges.

Deep Learning, a specialised subset of Machine Learning, employs artificial neural networks to tackle highly complex problems. By leveraging deep neural networks composed of multiple layers, researchers can achieve exceptional results in areas such as image recognition, natural language processing, and predictive modelling. In physics, deep learning is instrumental in simulating laser interactions with materials, offering insights into intricate phenomena that were once beyond our grasp.

The foundation of effective Machine Learning lies in the quality of the data used. High-quality datasets that are thoroughly cleaned and pre-processed are essential for reliable results. Data collection, cleaning, and structuring ensure that the ML models can identify meaningful patterns and make accurate predictions. This preparation phase is critical to the success of any AI-driven research.

To ensure the robustness of ML models, the processes of training, testing, and validation are essential. During the training phase, the model learns patterns from labelled data. It is then evaluated on unseen data during testing to measure its predictive accuracy. Validation, the final step, involves fine-tuning the model's parameters to prevent overfitting and improve generalisability. Together, these stages ensure that ML models are reliable and adaptable to real-world scenarios.

Feature engineering is another vital aspect of Machine Learning. By selecting, transforming, or creating meaningful input features, researchers can enhance the performance of their models significantly. This step requires domain expertise and a deep understanding of the data to ensure that the model focuses on the most relevant factors.

Despite its strengths, AI has limitations that require careful consideration. The interpretability of complex models, such as deep learning, poses challenges, as the mechanisms driving their predictions are often opaque. Overfitting, where a model performs well on training data but poorly on unseen data, and underfitting, where a model fails to capture the complexities of the data, are common pitfalls. Additionally, biases in datasets can skew results, impacting the fairness and validity of findings. Addressing these limitations demands rigorous validation, ethical considerations, and a commitment to transparency.

In conclusion, AI, particularly Machine Learning, is revolutionising academic research, enabling breakthroughs across diverse fields. From healthcare and environmental science to education and physics, its applications are transforming how we conduct research and interpret results. However, as we embrace this trend, we must remain mindful of its limitations and ensure that its potential is harnessed responsibly and ethically. Ladies and gentlemen,

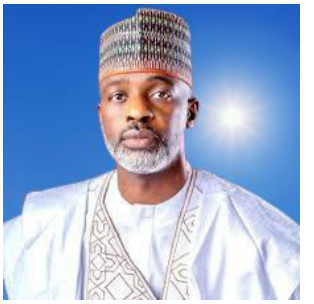
the choice before us is clear. Let us not merely witness the AI revolution but actively engage with it, shaping the future of academia and research. Together, we can ensure that AI becomes a cornerstone of academic advancement, driving innovation and understanding for generations to come. Thank you.

**Asst. Prof. Dr. Yakubu Sani Wudil**
Laser Research Group, Physics Department
King Fahd University of Petroleum and Minerals
Kingdom of Saudi Arabia

## Lead Presenter III: Challenges and Opportunities of AI in Academia

**Dr Nasir Abubakar Daniya** FNCS, MCPN

*Permanent Secretary, Ministry of Innovation and Digital Economy, Sokoto State, Nigeria*
*nasirdaniya@yahoo.com,*
*psmide@sokotostate.gov.ng*



**Abstract**

This paper conceptually examines challenges and opportunities the artificial intelligence (AI) offers as it affects acceptance, adoption and development in the academia. Specific focus was on Nigeria education system, especially the academia; tertiary/university education system. Social media perspectives and real-life involvements of respondents were reviewed. Case studies and practical experiences were analysed. Facebook and Twitter (now 'X') applications were used to obtain responses from across diverse audience that cuts across different professional backgrounds. Nearly 4,000 engagements were obtained within 24 hours from X alone, while there were about 500 engagements on Facebook over the same period. Two different X polls were conducted. The paper also used artificial intelligence application (Chat-GPT 3.5) to find what were the challenges and opportunities on the topic, which it describes as "*opportunities include the following: enhanced research; personalized learning efficiency and automation; collaboration and interdisciplinary research, and innovation in teaching methods. AI presents challenges in terms of ethics, bias, and skill gaps. Addressing the challenges will require careful consideration of ethical implications, investment in infrastructure and skills development, and ongoing collaboration between academia, industry, and policymakers".* Corroboratively, the results of the polls and responses revealed that IA presents both challenges and opportunities in the academia. Respondents believed that tertiary education would benefit more from AI than other levels of education in Nigeria. They equally believed that lack of adequate facilities is the major challenge that hinders development of AI across the academia in Nigeria. Solutions recommended by respondents include promulgation of laws on AI, declare a state of emergency on AI adoption in Nigeria, adopt e-Learning, adopt e-Government and institutionalize AI at all levels of governments. Further recommendations include localization of AI (in Nigerian local languages), fund AI adequately,

fund education sector adequately, fund basic education first and create more awareness of AI by the Nigerian government.

**Keywords:** AI, ChaGPT 3.5, e-Government, e-Learning, DL, ICT, ML, NOA

# AICP001: Harnessing Artificial Intelligence for Business Growth in Nigeria: Opportunities, Challenges, and Strategies for Success

Lawal, Amiru Balarabe[1,a], Sanusi Lawal[1], Zainab Onozare Maiyaki[1]
[1] Department of Business Administration, Faculty of Management and Social Sciences, Federal University Gusau, Zamfara State
[a] Correspondence: alawalbalarabe@gmail.com

## Abstract

This paper investigates the transformative impact of Artificial Intelligence (AI) on business growth in Nigeria, identifying opportunities for AI adoption, analyzing challenges hindering its integration, exploring success strategies, and understanding the resulting indicators of business growth. Employing a comprehensive literature review methodology, the study systematically sifts through scholarly works to distill key insights. Findings reveals that opportunities in agribusiness, healthcare, finance, and manufacturing emerge, signals potential avenues for innovation. Challenges encompass workforce reskilling, infrastructure limitations, and specific barriers for Small and Medium-sized Enterprises (SMEs). Success strategies include stakeholder collaboration, continuous learning, and adaptive leadership. indicators of business growth through successful AI adoption involve increased productivity, innovation, and economic diversification. The study concludes that AI presents a transformative force, but strategic navigation is imperative. The study underscores the need for tailored policies, ethical considerations, and proactive leadership to ensure sustainable integration. It's recommended that policymakers should focus on sector-specific frameworks, prioritize workforce training, and foster collaborative ecosystems.

**Keywords:** Artificial Intelligence, Business Growth, Opportunities, Challenges, Strategies

# AICP002: The Impact of AI on Boosting Educational Standards in Secondary Schools: A Case Study of 43 Science and Technical Schools in Kano State, Nigeria

Haruna Ali Isah
Department of Mechatronics, Faculty of Engineering, Aliko Dangote University of Science and Technology, Wudil, Kano State.

## Abstract

This paper examines the impact of artificial intelligence (AI) on enhancing educational standards in secondary schools, focusing on the context of Kano State, Nigeria. Specifically, the study investigates the influence of AI chatbots on academic performance and learning outcomes among students attending day schools versus boarding schools in the state. Data were collected from 43 Science and Technical secondary schools, comprising 30-day schools and 13 boarding schools. Findings suggest that students with access to AI chatbots, particularly those attending day schools and equipped with Android phones and internet connectivity, exhibit higher levels of academic intelligence compared to their counterparts in boarding schools. The paper underscores the potential of AI chatbots in facilitating research, assignments, tests, homework, and clarifications, thereby contributing to a more effective learning environment.

**Keywords:** Artificial Intelligence, Educational Standards, Secondary Schools, Kano State, Nigeria, AI Chatbots

# AICP003: Academic Evolution: Unleashing the Potential of Artificial Intelligence

Muhammad Ma'aruf Abdulmumin
Department of Chemistry, Mewar University, NH 48 Gangrar, Chittorgarh, Rajasthan-312901
Correspondence: maarufabdulmumin@gmail.com

## Abstract

This study explores the transformative potential of Artificial Intelligence (AI) in academia, examining its impact on education, research, and administration. It highlights how AI enhances predictive modelling, pattern recognition, and data analysis in research, while Intelligent Tutoring Systems provide personalised learning experiences tailored to individual students. Real-world case studies illustrate effective AI applications, including improved educational outcomes and innovative solutions. The study also addresses AI's role in automating administrative tasks such as scheduling, grading, and resource management, as well as its contribution to student support services through virtual assistants and chatbots. Furthermore, it discusses industry-academia collaborations that foster knowledge exchange and innovation. Concluding, the study highlights AI's potential as a catalyst for ongoing academic progress and a transformative force in the future of education.

**Keywords:** Artificial Intelligence, Education, Research, Personalised Learning, Academic Innovation

# AICP004: Artificial Intelligence (AI) in Education

Nura Bishir[1,a], Abubakar Sanusi Imam[2], Hussaini Shehu Saleh[3]
[1] Ahmadu Bello University, Zaria, Kaduna State
[2] Al-Qalam University, Katsina 820102, Katsina State
[3] A B I Consult, Nigeria
[a] Correspondence: nurabishir80@gmail.com

## Abstract

Artificial intelligence (AI) stands as a transformative force in education, offering innovative solutions to enhance teaching and learning experiences. This paper navigates the integration of AI in educational settings, addressing challenges and opportunities across various domains. Beginning with an overview of AI's evolution in education, the exploration encompasses adaptive learning platforms, intelligent tutoring systems, and data analytics tools. Impacts on academic processes like personalized learning and data-driven decision-making are examined alongside ethical considerations and strategies for responsible integration. Drawing from case studies, best practices, and future directions, the paper emphasizes embracing AI's potential while upholding ethical principles and ensuring equitable access to AI-driven education.

**Keywords:** Artificial Intelligence, Adaptive Learning, Intelligent Tutoring Systems, Data Analytics, Ethical Considerations, Personalized Learning, Administrative Efficiency

# AICP005: Artificial Intelligence (AI) and the Future of Teaching and Learning Mathematics Education in Nigeria

Tajudeen Alani Williams[1,a], Abdulhakeem Tajudeen[2,b]
[1] Department of Mathematics, School of Secondary Education (Sciences), Federal College of Education, Katsina
[2] Department of Computer Science, Faculty of Computing, Federal University Dutsinma, Katsina
[a] +234 806 799 2349, [b] +234 701 375 0908

## Abstract

Artificial Intelligence (AI) is a rapidly evolving field with the potential to transform social interactions, including education. This paper outlines strategies to equip teachers and learners with essential AI competencies. It examines how AI is generating innovative teaching and learning solutions, particularly in mathematics education, by enabling adaptable, computer-based environments. Key contributions include data analytics for educational insights, remote learning support, gamified learning, language assistance, skills development, and vocational training. Challenges in Nigeria, such as infrastructure deficits, technological barriers, lack of skilled personnel, high implementation costs, and limited awareness, are discussed. Proposed short-term solutions include online AI courses, open-source tools, virtual labs, teacher training workshops, public awareness campaigns, and supportive government policies. Long-term recommendations focus on infrastructure development, curriculum enhancement, teacher professional development, research centres, public-private collaborations, inclusive education initiatives, international partnerships, and continuous policy evaluation.

**Keywords:** Artificial Intelligence, Mathematics Education, Teaching and Learning

# AICP006: The Application of Artificial Intelligence in Econometrics: Challenges and Way Forward

Salisu Umar[1,a], Mustapha Abdullahi[1,b], Haruna Muhammed[1,c]
[1] Department of Economics, Aminu Saleh College of Education, Azare, Bauchi State
[a] salisuumar09@yahoo.com, [b] mustaphaabdullahi1419@gmail.com,
[c] hmahammah@gmail.com

## Abstract

The application of artificial intelligence in educational setting has become prevalent due to advancements in computing and information processing methods in teaching and learning. This study aims to evaluate the challenges of artificial intelligence within teaching and learning econometrics in Nigeria by analyzing existing literature published over the last ten (10) years 2013 to 2023. The paper also analyses how artificial intelligence can be applied to improve learning econometrics. The study has identified some challenges confronting AI: technological and resource limitation, over fitting and inaccurate forecast. Finally, the study put forward some recommendations for artificial intelligence, with a focus on new approaches of using AI in learning econometrics in higher institutions.

**Keywords:** Artificial Intelligence, Education, Econometrics, Nigeria

# AICP007: Transforming Education in Nigeria: A Roadmap for Integrating Artificial Intelligence in Tertiary Institutions

Idrees Mahmud Gana[1,a], Fauziyya Mohammed Rabiu[2], Rabi Tafa Akanbi[3], Adeleye Oluwaseyi Wisdom[4]
[1] Department of Political Science, Edusoko University Bida, Niger State
[2] Department of Economics, Edusoko University Bida, Niger State
[3] Department of Sociology, Edusoko University Bida, Niger State
[4] Department of Criminology & Security Studies, Edusoko University Bida, Niger State
[a] Correspondence: mahmud.idrees@gmail.com

## Abstract

This study examines the role of artificial intelligence (AI) in enhancing the quality and relevance of academic programmes in Nigerian tertiary education. Using the Technological Acceptance Model (TAM) as its theoretical framework, the study employed a mixed-methods approach, combining surveys of staff and students at Edusoko University in Bida, Niger State, with secondary data analysis. The findings highlight widespread optimism about AI's potential to improve teaching and learning but also reveal concerns about infrastructural readiness, ethical challenges, and academic preparedness. Thus, the study suggests the need for robust infrastructure, comprehensive faculty training, and clear ethical guidelines for AI use in education. It calls for collaboration among educational institutions, government agencies, and industry stakeholders to create an enabling environment for AI integration.

**Keywords:** Education, Integration, Artificial Intelligence, Transformation, Tertiary Institutions

# AICP008: A Comparative Study of Artificial Intelligence Versus Human Brain in Translation Technology

Zaki, Muhammad Zayyanu
Department of French, Faculty of Arts, Usmanu Danfodiyo University, Sokoto – Nigeria
Correspondence: muhammad.zayyanu@udusok.edu.ng

## Abstract

This paper examines the intricacies of intelligence in the context of translation technology, specifically comparing the capabilities of Artificial Intelligence (AI) to human cognition. The paper delves into the physiological and psychological dynamics between the human brain and heart while incorporating an Islamic perspective on intellect and its significance in human development. The paper positions the human brain as central to cognitive function, yet it emphasizes the contribution of the heart, challenging conventional views that regard intelligence as human brain-centric. The methodology blends scientific inquiry with interpretative theory of meaning and religious insights, undertaking a comprehensive literature review that traverses neuroscientific evidence, physiological theory, and Islamic teachings. The unique contribution of this study lies in its holistic approach to understanding human intelligence, proposing that the heart plays a crucial role that may give humans an edge in tasks such as translation when compared to AI systems. The paper concludes that human intelligence, particularly when seen as a function of both the human brain and heart, is superior to that of AI, prompting a reconsideration of traditional concepts of intelligence. This intersectional paper spans neurological, physiological, and Islamic perspectives to justify this stance and to better contextualize the facets of human and machine intelligence. Limitations are acknowledged, paving the way for future explorations into this multifaceted domain. The findings hold significance for the advancement of translation technology and contribute to the broader discourse on the capacities and uniqueness of human cognition versus AI.

**Keywords:** Artificial Intelligence, Human Brain, Sensitivity, Translation Technology, Heart and Intelligence

# AICP009: Implications of Artificial Intelligence on Academic Excellence in Nigeria

Abubakar Shehu
Department of Mass Communication, Faculty of Social Sciences, Ahmadu Bello University, Zaria – Nigeria
Correspondence: abubakarshehu@abu.edu.ng, abubakarsnk@gmail.com

## Abstract

Artificial Intelligence (AI) is a relatively new phenomenon in Nigeria, bringing both challenges and opportunities. This paper examines the implications of AI in the Nigerian education sector, focusing on its potential to transform teaching methods, learning outcomes, and student performance. While AI offers opportunities for personalised learning, adaptive assessments, and fostering critical 21st-century skills, it also presents challenges related to accessibility, infrastructure, and the need for robust policy frameworks. Using the Technology Acceptance Model (TAM) as a theoretical foundation and a desk review methodology, the paper explores existing scholarly debates to provide insights into the benefits and barriers of AI integration in education for academic excellence. The study aims to guide stakeholders, policymakers, and educators in leveraging AI to enhance academic excellence in Nigeria.

**Keywords:** Artificial Intelligence, Desk Review, Technology Acceptance, Academic Excellence, Nigeria.

# AICP010: Examining the Effect of AI Language Transfer on Human Cognitive Processes

Atiku Sani
Sokoto State University, Sokoto – Nigeria
Contact: +234 803 639 4807

## Abstract

This paper examines the effects of Artificial Intelligence (AI) on language transfer and its impact on human cognitive processes. Language transfer refers to the application of knowledge from one language to another, and this study investigates how AI facilitates or mimics this process. The objectives include evaluating the mechanisms by which AI influences human cognition during language transfer, comparing the efficiency and accuracy of AI-assisted methods with traditional approaches, and exploring the psychological and neurological implications of AI-mediated language learning on memory retention and recall. Drawing on theories from linguistics, psychology, and AI, the study finds that AI-powered systems enhance language learning by providing personalised, interactive, and adaptive experiences. They reduce cognitive load by automating tasks like translation and grammar correction, allowing users to focus on comprehension and communication, while also addressing cross-linguistic influences. Recommendations include developing personalised learning paths, implementing scaffolding techniques to provide guided support, and incorporating multimodal elements (text, audio, and visuals) in AI systems to improve comprehension and retention.

**Keywords:** Artificial Intelligence, Language Transfer, Cognitive Processes, Language Learning.

# AICP011: Chatbot Revolution on Transforming Library Reference Services

Abdulqawiyyu Mustapha[1,a], Amina Ado Abubakar[1]
[1] Skyline University, Kano – Nigeria
[a] Correspondence: profqawiyyu@gmail.com

## Abstract

Chatbots go by a variety of names, including digital assistants, intelligent agents, and virtual agents. Chatbots have become increasingly popular in recent years. This new technology is expected to have a wide-ranging impact on humanity. It is found that the human likeness of chatbots for reference services in the library, while potentially of some relevance for the user experience, is dwarfed in importance compared to such chatbots' ability to efficiently and adequately handle inquiries. As such, this study serves to complement and extend current knowledge. Libraries have long been regarded as reliable sources of information and knowledge. However, in today's fast-paced digital age, library users need quick and easy access to information. This shift in user expectations, combined with technological advances, has resulted in the introduction of chatbots as revolutionary tools for library reference aids. AI-powered chatbots have the potential to change how libraries provide service and communicate with their clients. As libraries strive to meet their users' changing needs in an increasingly digital world, chatbots offer an exciting opportunity to transform how library services are delivered, improving user experiences and ensuring that libraries remain valuable and accessible sources of knowledge and information.

**Keywords:** User Satisfaction, Efficiency, Technological Advancements, User Expectations.

# AICP012: Exploring the Potential Impact of AI and Digitalisation on the Evolving Dynamics between Educators and Students

Mohammed, Nadamau Shehu
Abubakar Tafawa Balewa University, Bauchi – Nigeria
Correspondence: msnadamau@gmail.com

## Abstract

This paper explores the potential implications of artificial intelligence (AI) and digitalisation on the dynamics between educators and students. As AI continues to permeate various aspects of education, there is a need to understand its influence on the roles of, and interactions between, teachers and learners. The paper explores the changing nature of the educator–student relationship in the digital age, examining the opportunities and challenges presented by AI and digital tools in educational contexts. Based on the synthesis of existing literature and emerging trends, this paper offers insights into how educators and students can effectively adapt to the evolving technological realities to enhance learning outcomes and foster meaningful connections within the educational setting.

**Keywords:** Artificial intelligence, Digitalisation, Educators, Students.

# AICP013: From Hurdles to Horizons: Transforming Nigerian Education through Technology

Nasir Muhammad Sabo
Bauchi State University, Gadau – Nigeria
Contact: +234 806 156 1049

## Abstract

In the dynamic landscape of Nigerian education, the promise of technology to revolutionize learning is met with multiple challenges. As we navigate the digital era, the hurdles of limited infrastructure, unequal access, and the imperative for improved teacher training cast shadows on the transformative potential of educational technology in Nigeria. This essay explores these challenges, shedding light on the essential steps required to surmount these obstacles and pave the way for a technologically enriched educational future.

**Keywords:** Educational Technology, Nigerian Education, Infrastructure Challenges, Teacher Training.

# AICP014: The Challenges and Opportunities of Artificial Intelligence in Teaching Fine and Applied Art Education in Nigeria

Idris Garba
Department of Fine and Applied Art, Jigawa State College of Education,
PMB 1002 Gumel – Nigeria
Correspondence: garbazagwalis@gmail.com

## Abstract

This paper examines the integration of Artificial Intelligence (AI) into fine and applied art education in Nigeria, highlighting the challenges and opportunities it presents. The study explores barriers such as inadequate infrastructure, limited access to technology, and resistance to change, which hinder the adoption of AI-driven approaches in fine and applied arts instruction. At the same time, it identifies the transformative potential of AI in providing personalised learning experiences and innovative tools for artistic expression, fostering a more dynamic and inclusive learning environment. The research emphasises the need for strategic planning and collaboration among educators, institutions, and policymakers to effectively address these challenges and maximise the opportunities AI offers. The paper concludes by providing stakeholders with actionable insights for surmounting the complexities of AI integration in fine and applied art education in Nigeria.

**Keywords:** AI Integration, Fine and Applied Art Education, Nigerian Context, Educational Challenges.

# AICP015: Artificial Intelligence and Health Facilities in Nigeria: An Examination

Ahmadu Shehu Nadamau[1,a], Abubakar Shehu[2], Mohammed Nadamau Shehu[3]
[1] Department of Pharmaceutical Microbiology, Faculty of Pharmaceutical Sciences, Ahmadu Bello University Zaria – Nigeria
[2] Department of Mass Communication, Faculty of Social Sciences, Ahmadu Bello University, Zaria – Nigeria
[3] Department of Management Information Technology, Faculty of Management Sciences, Abubakar Tafawa Balewa University, Bauchi – Nigeria
Correspondence: asnadamau@gmail.com

## Abstract

This study explores the integration and impact of artificial intelligence (AI) in health facilities across Nigeria. As global healthcare increasingly leverages AI to enhance service delivery, this research evaluates the current state of AI implementation in Nigerian health facilities, identifies challenges, and highlights opportunities for improvement. The study focuses on specific AI applications, including diagnostic tools, predictive analytics, and telehealth solutions, showcasing examples of successful implementations that have enhanced patient outcomes and healthcare efficiency. Key challenges, such as infrastructural deficiencies, regulatory constraints, and workforce readiness, are critically analysed. The research offers practical recommendations to address these barriers and create an enabling environment for AI adoption. It also provides suggestions for policymakers, healthcare providers, and technology developers. The study addresses the unique contextual challenges faced by Nigeria, contributing to strategic planning and informed decision-making for effective AI integration in the healthcare sector.

**Keywords:** Artificial Intelligence, Health Facilities, Examination Applications, Nigeria.

# AICP016: An Assessment of Artificial Intelligence (AI)-Enhanced Classroom and Teacher's Productivity in Lagos State Education District V

Giwa, Yussuf Olaoye[1,a], Ajiboye, Shedrack Okiki[2],
Odufisan, Ramota Odufunke[3]
[1] Lagos State University of Education, Oto/Ijanikin – Nigeria
[2] Lagos State University, Ojo – Nigeria
[3] University of Lagos, Akoka – Nigeria
[a] Correspondence: giwayo@lasued.edu.ng

## Abstract

This study assessed the impact of Artificial Intelligence (AI)-enhanced classrooms on teachers' productivity in Lagos State Education District V. The study population comprised 10 senior secondary schools in the district. A simple random sampling technique was used to select one school from each zone, and purposive sampling was employed to select 25 teachers from each school, resulting in a total of 100 participants. Data was collected using a 4-point Likert scale questionnaire, and the hypotheses were tested using simple regression analysis. The results revealed that AI-enhanced classrooms have a positive effect on teachers' productivity in Lagos State Education District V. Based on these findings, it is recommended that educational policymakers and administrators in the district take further steps to integrate AI-enhanced classrooms. Additionally, fostering collaboration and knowledge sharing among educators can accelerate the adoption of AI technologies.

**Keywords:** Teacher Productivity, Artificial Intelligence, Classroom, AI Enhancement.

# AICP017: Design and Implementation of a Smart Intruder Detection System

Owoeye Samuel[1,a], Folasade Durodola[1], Oladejo Racheal[2] Obasuyi Samuel[1], Qasim Abdulmujeeb[1], Raheem Mokolade[3]
[1] Department of Mechatronics Engineering, Federal University of Agriculture, Abeokuta, Nigeria.
[2] Department of Computer Science, Ogun State Institute of Technology, Igbesa, Ogun State, Nigeria.
[3] Industrial Plant Design and Development, Raw Materials Research and Development Council, Abuja, Nigeria.
[a] Correspondence: owoeyeso@funaab.edu.ng

## Abstract

This paper addresses the pressing issue of home intrusions in Nigeria by presenting the development and implementation of a Smart Intruder Detection System. The system leverages the ESP32-CAM board and ATMega328P microcontroller to enhance lighting, security, and surveillance functionalities. The ESP32-CAM, serving as the central control unit, utilises its built-in Wi-Fi and camera capabilities to facilitate seamless communication with the ATMega328P microcontroller, which manages lighting, motion detection, and alarm systems. The lighting control component supports various sources, such as LEDs and smart bulbs, which can be controlled via a mobile application or voice commands. For surveillance, the ESP32-CAM streams real-time video to users' mobile devices or monitoring stations, while the ATMega328P enables motion detection, triggering alerts and activating alarms or lighting upon detecting movement. This integration creates a robust and intelligent home automation system that enhances security, energy efficiency, and user convenience. The study provides valuable insights into the practical application of advanced technologies for developing comprehensive smart home solutions.

**Keywords:** Smart Home Automation, Intruder Detection System, ESP32-CAM, ATMega328P, Security and Surveillance.

# AICP018: The Application of AI in Historical Studies: Problems and Prospects

Shamsuddeen Bawale[1,a], Mukhtar Habibu Dankullu[2]
[1] Arewa House Centre of Historical Research and Documentation, Ahmadu Bello University, Zaria, Nigeria.
[2] Department of History and International Studies, Federal University Gashua, Nigeria
[a] Correspondence: shambmal@gmail.com

## Abstract

Artificial Intelligence (AI) has emerged as a modern technological tool with significant potential for teaching, learning, and research. Its ability to gather, analyse, and interpret data makes it highly beneficial to researchers across various disciplines. This paper explores the application of AI in historical studies, examining its role in the discovery, collection, interpretation, organisation, and presentation of historical facts. Using a combination of qualitative and quantitative methods, the study analyses data from both primary and secondary sources. The findings reveal that AI serves as an additional resource for historical research, aiding in the analysis and interpretation of events. However, the paper also identifies limitations and challenges associated with AI, such as ethical considerations, data biases, and technical obstacles. Historians are urged to critically assess and rigorously address these issues to maximise the potential of AI while preserving the integrity of historical studies.

**Keywords:** Artificial Intelligence (AI), Historical Studies, Data Analysis, Research Applications.

# AICP019: Rhythms of Revolution: Navigating the Interplay of Artificial Intelligence and Pedagogy in the Future of Learning

Khadija Waiman Musa[1,a], Mustapha Kabir[2]
[1] Department of Science and Technical Education, Bayero University Kano.
[2] Federal University Dutsin-Ma, Katsina State, Nigeria
[a] Correspondence: waimanmusakhadija@gmail.com

## Abstract

This paper explores the transformative potential of Artificial Intelligence (AI) in shaping the future of education, highlighting its profound impacts, challenges, and opportunities. AI has the capacity to revolutionise learning through personalised and adaptive experiences, offering tools such as intelligent tutoring systems and automated grading that can free educators from routine tasks, enabling them to focus on fostering critical thinking and creativity. However, integrating AI into education brings complexities, including ethical concerns, privacy issues, and the digital divide, which require careful consideration. The paper envisions AI as a complement to human capabilities, enhancing inclusivity by democratising access to quality education globally. It argues for a balanced approach where AI harmonises with traditional pedagogy to create an adaptive, inclusive, and evolving educational environment. By embracing this synergy, the future of education can become a dynamic system that meets the unique needs of every learner.

**Keywords:** Artificial Intelligence, Education, Personalised Learning, Ethical Challenges, Digital Divide.

# AICP021: Using AI to Unlock Literacy: A Review of Enhancing Early Reading Instruction in Nigerian Primary Schools

Namse Udosen
School of Education and Social Works, University of Sussex, UK
[a] Correspondence: namse.udosen@gmail.com

## Abstract

Literacy is the cornerstone of education, yet early reading difficulties persist in Nigerian primary schools, particularly in resource-constrained environments. This desk-based literature review explores the potential of artificial intelligence (AI) to revolutionize early reading instruction for Nigerian children. Examining research from both global and Nigerian contexts, the review critically assesses the application of AI-powered tools and technologies in improving Phonological awareness and decoding skills, Reading comprehension and engagement and Teacher support and professional development. The review further analyses potential challenges and ethical considerations related to AI implementation in Nigerian schools, including internet access, teacher training, and cultural sensitivity. Finally, it proposes a research agenda and a host of recommendations for policymakers and educators to leverage AI responsibly and effectively in optimizing early reading instruction for a brighter future for Nigerian children.

**Keywords:** Artificial Intelligence, Early Reading, Literacy, Nigeria, Primary Schools, Educational Technology, Teacher Support, Ethical Considerations.

# AICP023: Artificial Intelligence and Academic Research: Embracing Opportunities, Navigating Challenges

Bala Salisu
School of Management Studies, The Federal Polytechnic Damaturu, Nigeria
[a] Correspondence: sbala@fedpodam.edu.ng

## Abstract

The integration of Artificial Intelligence (AI) in academic research presents a double-edged sword: immense potential for discovery alongside complex challenges. This paper explores the transformative potential of AI in academic research by presenting a matrix roadmap for researchers to leverage AI effectively. It maps six key researcher functions (from knowledge creation to policy engagement) onto corresponding AI functionalities. A ranking of these tools based on their effectiveness in supporting specific researcher functions offer suggestions for optimising the use of AI resources in research. However, there are challenges of interpretability of AI models, data bias, overreliance on data, potential misuse, skill gaps, and automation anxieties. The paper tackles each, proposing solutions for responsible AI integration. This work serves as a guide for navigating the AI–academia intersection, maximising opportunities while mitigating challenges. It aims to foster a synergistic relationship between human ingenuity and machine intelligence, propelling knowledge advancement responsibly.

**Keywords:** Artificial Intelligence, Academic Research, Collaboration, Ethical Considerations, Responsible Integration.

# AICP024: Artificial Intelligence Application in the Provision of Library Services in Nigerian University Libraries: Prospects and Challenges

Ilo, Promise[1,a], Ibrahim, M. M. Furfuri[2], Ehikioya, Emmanuel Ehimen[3], Chiegonu, Nwachi[1]
[1] Nnamdi Azikiwe Library, University of Nigeria, Nsukka, Nigeria
[2] Inuwa Abdul-Kadir Library, Sokoto State University, Sokoto, Nigeria
[3] Department of Library and Information Science, Tai Solarin University of Education, Ijebu, Ogun State, Nigeria
[a] Correspondence: promise.ilo@unn.edu.ng

## Abstract

The integration of Artificial Intelligence (AI) into library services represents a significant development in research and information management, offering enhanced accessibility, efficiency, and user-centric experiences. This paper explores the prospects and challenges of adopting AI technologies in Nigerian university libraries, where academic libraries are progressively embracing technological innovations to meet the dynamic needs of faculty, staff, students, and researchers. AI-driven systems can automate routine tasks, streamline information retrieval, and provide personalised services, thereby improving resource discovery, tailored recommendations, and operational efficiency. Despite these promising prospects, significant hurdles remain, including limited infrastructure, insufficient funding, and the digital divide among users. Concerns over data privacy, algorithmic bias, and ethical issues further highlight the need for robust governance frameworks. Using a qualitative research approach, this study synthesises insights from literature, interviews with library professionals, and case studies of AI implementation in Nigerian university libraries. The findings offer a comprehensive analysis of the current state of AI adoption, delineate the key opportunities and obstacles, and propose actionable recommendations for optimising AI deployment to enhance library services.

**Keywords:** Artificial Intelligence, Library Services Provision, Nigerian University Libraries.

# AICP025: Artificial Intelligence, Education, and the Nigerian System

Ikea, Chidimma S.
Department of Philosophy, Imo State University, Owerri, Nigeria
Correspondence: mmaimsu@gmail.com

## Abstract

This paper makes an exposition of the importance of artificial intelligence in the educational system in Nigeria. Artificial intelligence can be defined as the simulation of human intelligence processes by machines, especially computer systems, while education entails the creation of a healthy mind in a healthy body. In other words, Education is nothing but a means to equip the person to face life and to grow into worthy citizens. This can be successfully done only when the educational process is advanced and planned in such a way as to be geared to the ideals and requirements of life. This century is technology driven; hence the educational system can record growth and development with the use of artificial intelligence. No doubt that there are challenges (lack of electricity, ICT illiteracy, poverty, amongst others) associated with achieving this feat. This paper therefore concludes that the Nigerian educational system will record more success, when artificial intelligence is embraced.

**Keywords:** Education, Artificial Intelligence, Nigeria, Development.

# AICP026: Minimize the Risks, Maximize the Benefits: How to Use ChatGPT to Write a Literature Review with Integrity

Shuaibu Muhammad
Department of Social Studies Education, Shehu Shagari University of Education (SSUE), Sokoto, Nigeria
Correspondence: mohdsmc@yahoo.com

## Abstract

ChatGPT has emerged as a research tool used across various fields, helping researchers in doing various tasks ranging from generating conceptual content to summarizing lengthy notes. Grounded on the natural-artificial framework for analyzing AI's generated content, this study examines the specific application of ChatGPT in one of the fundamental components of academic writing—the literature reviews. The study uses a quasi-qualitative research approach to investigate how researchers utilize ChatGPT in crafting literature reviews. The findings reveal that while ChatGPT showcases impressive capabilities as a language generator, it exhibits shortcomings, particularly in accuracy, logical reasoning, and adherence to ethical academic writing standards. Thus, caution is advised when relying solely on ChatGPT for literature review writing, as it may produce fabricated content supported by synthetic data and erroneous citations. This paper contributes to the understanding of ChatGPT's role in academic writing and underscores the importance of critically assessing its outputs.

**Keywords:** Artificial Intelligence (AI), ChatGPT, Academic Writing, Literature Review, Integrity.

# AICP027: Exploring the Role of Artificial Intelligence in Enhancing STEM Education: A Focus on Science, Technology, Mathematics, and Engineering (STME) Integration

Najmuddeen Alhassan[1,a], Amina Alhassan[2], Maimuna Surajo[1]
[1] Biology Department, Federal College of Education, Zaria, Nigeria
[2] Department of Science Education, Faculty of Education, Kaduna State University, Kaduna, Nigeria
[a] Correspondence: muhalbg@gmail.com

## Abstract

This study explores the role of Artificial Intelligence (AI) in STEM education, with specific concentration on Science, Technology, Engineering, and Mathematics (STME) fields. It examines the specific potential of STEM education to enhance teaching methods and student engagement. Drawing on a comprehensive review of existing literature, the study highlights the benefits of AI in STEM education, including adaptive teaching, personalised feedback, and interactive learning tools. It also highlights the necessity of incorporating AI into STEM curricula to align with evolving educational and industry demands. The paper advocates for specialised training programmes (e.g., workshops, seminars, and ongoing professional development initiatives) to equip educators with the skills to effectively teach AI-integrated STEM subjects. Also, the study proposes the development of AI-based educational materials such as interactive software, simulations, and virtual laboratories. Collaboration with technology companies and industry professionals is suggested to ensure that AI-driven educational programmes remain relevant and aligned with real-world applications. Integrating AI technologies in STEM education can facilitate personalise learning experiences, adaptive content delivery, and provide instant feedback, thereby fostering a more effective and engaging educational environment.

**Keywords:** Artificial Intelligence (AI), STEM Education, Personalised Learning, Adaptive Teaching, Educational Technology.

# AICP028: AI and Academia: Navigating the Future World

Ibrahim Musa Mungadi
Department of Computer Science, Federal University Birnin Kebbi, Nigeria
Correspondence: ibrahimmusamgd@gmail.com

## Abstract

Artificial Intelligence (AI) is rapidly transforming various sectors, and academia is no exception. The integration of AI technologies in academic institutions brings about numerous opportunities as well as challenges. This paper explores the current landscape of AI in academia, discusses its implications, and provides insights into navigating the future world where AI plays a central role. It discusses the impact of AI on teaching, research, administration, and the ethical considerations surrounding its adoption. This paper explores the transformative impact of artificial intelligence (AI) on the landscape of academia, envisioning a future world shaped by the dynamic interaction between intelligent technologies and scholarly pursuits. As AI continues to evolve, it becomes imperative to explore its multifaceted implications for higher education, research, and the dissemination of knowledge. Additionally, strategies for leveraging AI to enhance academic productivity, innovation, and inclusivity are examined, along with recommendations for addressing potential pitfalls. By understanding and harnessing the power of AI in academia, institutions can better prepare themselves to thrive in the ever-evolving landscape of education and research.

**Keywords:** Artificial Intelligence, Academia, Navigating the Future.

# AICP029: Lecturers' Level of Awareness of Artificial Intelligence as Correlate of their Digital Competence at Federal University Wukari, Nigeria

Musa, Abubakar[1,a], Madu, Catherine Omeriyang[2]
[1] Department of Science Education, Faculty of Education, Federal University, Wukari, Taraba State, Nigeria
[2] Department of Adult and Continuing Education, Faculty of Education, Nnamdi Azikiwe University, Awka, Anambra State
[a] Correspondence: abubakarmusa@fuwukari.edu.ng

## Abstract

The rapid development of artificial intelligence (AI) presents both unprecedented opportunities and challenges for the education sector. In this context, the present study investigates the level of awareness of AI among lecturers at Federal University Wukari, Nigeria, and explores its potential relationship with their digital competence. The study is guided by three objectives, such as to determine lecturers' level of awareness of artificial intelligence at Faculty of Education, Federal University, Wukari, Nigeria, among others. The study employs Correlational design approach, correlating lecturers' level of awareness of AI and their digital competence. The population of the study comprised of 67 academic staff of Faculty of Education, Federal University, Wukari, the entire population was used because it was manageable. Artificial Intelligence Awareness Questionnaire (AIAQ) and Digital Competence Questionnaire (DCQ) were used for data collection with reliability indices of 0.93 and 0.87 respectively. The data collected were analyzed using Mean and Pearson Product Moment Correlation (PPMC) statistical methods to determine the level of AI awareness among the lecturers and assess its correlation with their digital competence. The findings of this study revealed that there was moderate level of awareness of lecturers on AI, and also there was positive relationship between lecturers' level of awareness of AI and their digital competence, among others. The study recommended that school management should ensure organisation of training programmes on AI to increase AI literacy and equip the lecturers at the Faculty of Education, Federal University Wukari with the essential abilities to use AI effectively in their teaching activities.

**Keywords:** Artificial Intelligence, Digital Competence, University, Lecturers.

# AICP030: Development of an Automatic Fish Feeding System for Catfish

Hassan Muhammad Ambursa[1,a], Umar Ali Umar[1], Nasir Ismail[1]
[1] Department of Mechanical Engineering, Ahmadu Bello University, Zaria. Nigeria
[a] Correspondence: ambursahassan@gmail.com

## Abstract

Artificial Intelligence (AI) plays a key role in the area of automation, this work intended to provide a simple and easy means of feeding fish for the fish farmers thereby reducing the stress involved. Fish production can be greatly increased by dispensing the right amount of feed in accordance with the fish's demand, however most mechanical fish feeders still struggle to measure the amount of feed that the fish are actually consuming. Fish feeding according to regulatory frequency results in feed wastage, which degrades the water's quality and causes illnesses and stress. Fish have a habit to compete for food, during feeding process, which leads them to migrate towards the feeding region in pursuit of food. This research proposed an effective fish feeding system that classifies fish feeding behavior by tracking their movements as they look for food when it's time to eat. Fish movement is detected by an accelerometer sensor in addition to water changes. The data obtained is used to adjust the fish feeder and chooses whether to prolong or halt the feeding time. The average body weight of the fish in the fishpond is used to calculate the amount of feed to be dispensed. Additionally, the system incorporates a temperature control to accommodate varying weather and feeding schedules.

**Keywords:** Accelerometer sensor, Fish Feeding.

# AICP031: Application of Artificial Intelligence in Nigeria: A Comprehensive Overview

Shamsuddeen Mohammed[1,a], Abubakar Shehu[1]
[1] Department of Mass Communication, Faculty of Social Sciences, Ahmadu Bello University, Zaria, Nigeria
[a] Correspondence: shadeeny@gmail.com

## Abstract

The rapid advancement of artificial intelligence (AI) technologies is gaining global momentum, with Nigeria actively embracing its integration across various sectors to tackle challenges and unlock opportunities. This study explores the application of AI in Nigeria, focusing on key sectors where its impact is most evident. In healthcare, AI enhances diagnostic accuracy, optimises treatment plans, and improves patient outcomes, while telemedicine platforms powered by AI expand access to healthcare in remote areas. The financial sector leverages AI for fraud detection, risk management, and personalised financial services, with AI-powered chatbots and virtual assistants improving customer interactions and operational efficiency. In education, AI supports personalised learning experiences, adaptive assessment tools, and intelligent tutoring systems, addressing diverse student needs and enhancing education quality. The agricultural sector benefits from AI-driven solutions for crop management, soil monitoring, and weather prediction, boosting productivity and sustainability. However, challenges such as data privacy, ethical concerns, and a shortage of skilled professionals highlight the need for cautious and responsible implementation. This study highlights AI's transformative potential in Nigeria and advocates for its inclusive and sustainable deployment across sectors.

**Keywords:** Application, Artificial Intelligence, Opportunities, Challenges, Nigeria.

# AICP032: Exploring the Impact of Artificial Intelligence on Language Education in the 21st Century: Opportunities, Challenges, and Pedagogical Strategies

Zainab Abdulkarim[1,a], Halima Abdullahi Aminu[1]
[1] Department of English Language and Linguistics, Sokoto State University, Sokoto, Nigeria
[a] Correspondence: abdulkarimzaynab@gmail.com

## Abstract

This study investigates the transformative impact of artificial intelligence (AI) on language education in the 21st century, exploring opportunities, challenges, and pedagogical strategies associated with integrating AI technologies into language learning. Employing a qualitative research design, the study uses in-depth interviews, focus group discussions, and content analysis to examine the role of AI in reshaping traditional language teaching methods. Participants, including language educators, students, and AI developers, were selected using purposeful sampling to ensure diverse perspectives on AI integration in language education. The findings highlight the potential benefits of AI, such as enhanced language acquisition through advanced language models and educational platforms, while addressing challenges like ethical concerns and implementation barriers. This research offers innovative strategies for optimizing the synergy between AI and language education, drawing on a thorough analysis of literature, case studies, and emerging trends. It aims to guide educators, policymakers, and stakeholders in navigating the evolving intersection of technology and language learning.

**Keywords:** Artificial Intelligence, Language Education, Pedagogical Strategies, Ethical Considerations, Educational Technology.

# AICP033: Exploring the Application of Artificial Intelligence in Education: Foresight, Challenges, Roles and Research Perspective

Abdulrahman Ibrahim[1,a], Isah Saminu Kanoma[2], Abdulrashid Muazu[1], Salihu Malami[3]
[1] ICT/MIS Directorate, Abdu Gusau Polytechnic, Talata Mafara, Zamfara State, Nigeria
[2] ICT/MIS Directorate, Federal University Gusau, Zamfara State, Nigeria
[3] National Space Research and Development Agency, Zonal Application Laboratory, Kano State, Nigeria
[a] Correspondence: abdulbanaga1@gmail.com

## Abstract

Artificial intelligence (AI) has become a transformative force in education, offering the potential to revolutionise teaching and learning experiences. This article explores AI's diverse roles, potential, challenges, and research perspectives in the educational landscape. AI's ability to personalise learning by adapting instructional content and providing feedback based on individual student data holds promise for fostering engagement and enhancing outcomes. However, its integration faces significant challenges, including privacy concerns and the need to ensure equitable access for all learners. AI plays various roles in education, such as powering intelligent tutoring systems, supporting virtual assistants, facilitating grading and assessment, and enabling data-driven insights. Intelligent tutoring systems provide personalised instruction through AI algorithms, while virtual assistants assist both students and teachers by offering explanations and resources. Despite these advancements, further research is essential to understand AI's impact on learning outcomes, student engagement, and the evolving roles of educators in AI-enhanced classrooms. Efforts must also focus on developing AI systems that are trustworthy, transparent, and accountable to ensure ethical and effective implementation. Addressing these issues can enable educators harness AI to create more dynamic, inclusive, and adaptable learning environments, ultimately improving educational outcomes.

**Keywords:** Challenges, Foresight, Students, Educators, and Artificial intelligence.

# AICP034: The Future of Teaching and Learning for Senior Secondary School Students with Depression in Nigeria: The Potential of AI

Udo, Menyene-Abasi Andem
Department of Educational Foundations, Faculty of Education and Extention Services, Usmanu Danfodiyo University, Sokoto, Nigeria.
Correspondence: udoprogress@gmail.com

## Abstract

Depression among senior secondary school students is a pressing mental health concern in Nigeria. This study explores the potential role of Artificial Intelligence (AI) in improving teaching and learning outcomes for these students. It highlights the challenges faced by depressed students in traditional educational settings and proposes AI-based interventions as a promising avenue for addressing their unique needs. The study also outlines the prevalence and impact of depression among senior secondary school students in Nigeria. It emphasizes the detrimental effects on academic performance, social engagement, and overall well-being. The study discusses the potential of AI in revolutionizing the educational landscape for students with depression. Also, the study acknowledges the limitations and ethical considerations in implementing AI-based solutions. Issues such as data privacy, the digital divide, and algorithmic bias need was carefully addressed to ensure equitable access and safeguard sensitive information. The study concludes by advocating for the integration of AI into the education system to enhance teaching and learning for senior secondary school students with depression in Nigeria. It emphasizes the importance of a multidisciplinary approach, involving educators, mental health professionals, and technologists, to collaboratively design and implement AI interventions that prioritize student well-being. As the prevalence of depression among senior secondary school students continues to rise, the potential of AI in revolutionizing teaching and learning cannot be overlooked. Its ability to personalize education, provide emotional support, and address the unique needs of depressed students holds great promise for the future. However, careful planning, research, and collaboration are necessary to ensure ethical and effective implementation of AI in educational settings in Nigeria and beyond.

**Keywords:** Teaching and Learning, Depression, AI, Nigeria.

# AICP035: Literary Adaptation: A Call for Canon Formation in Literary Analysis under Content in Digital Humanities

Mujeedah Abdul Aleem Olagunju
Department of English and Literary Studies, Ahmadu Bello University, Zaria.
Correspondence: mujeedah@yahoo.com

## Abstract

This paper explores the growing trend of literary adaptations in literature and film studies and the growing need of canons to analyze the digitized format under the field of digital humanities. As technology advances and digital platforms become more accessible, the field of literary analysis has witnessed a significant shift in focus towards the popularity and examination of literary adaptations across various media forms, the way literary texts are accessed, disseminated, and consumed. These literary adaptations, transform traditional texts into new forms and mediums, including intertextual films, television series and interactive digital narratives. The study examines literary adaptations as an aspect in digital humanities. It criticizes the existing literary analysis as inadequate for making intellectual claims. And prescribes canons through which adaptations may better be appreciated. The paper employed qualitative research method and deployed documentary observation as instrument for data collection through scrutiny of critical works of adaptation scholars as primary data to emphasize the need for literary adaptation analysis. This paper maintained that, literary adaptations should be analyzed in the field of digital humanities due to the change process from text to multimedia enhanced by technology and Artificial intelligence. The paper concludes that there is a need to shift focus from literary analysis of text to adaptation analysis, using appropriate canons under the field of digital humanities.

**Keywords:** Adaptation Analysis, Literary Analysis, Canons for literary Adaptations and Digital Humanities.

# AICP036: Revolutionizing Communication Education: A Futuristic Exploration of Artificial Intelligence in Enhancing Teaching and Learning Strategies for the 21st Century

Basiru Saidu
Department of English Language and Linguistics, Sokoto State University, Sokoto, Nigeria
Correspondence: baasheersaidu@gmail.com

## Abstract

This study explores the perceptions and experiences of students and educators regarding the integration of artificial intelligence (AI) in communication education. It aims to examine the impact of AI on teaching and learning communication skills in the 21st century, focusing on optimising educational strategies and addressing ethical considerations. A qualitative research design was employed, utilising purposive sampling to select participants with substantial experience in AI-driven communication education. The study population comprised students and educators from diverse educational institutions. Data were collected through in-depth interviews and focus group discussions and analysed qualitatively. Findings reveal that most participants acknowledged AI's beneficial role in enhancing language proficiency and communication skills. However, technical challenges and resistance to change were identified as critical barriers to successful AI integration. The research highlights the positive impacts of AI while emphasising the need to address these challenges effectively. Recommendations include resolving technical issues, overcoming resistance, enhancing human interaction, and continuously refining AI tools to optimise their application in communication education. These insights offer valuable guidance for educators and policymakers to refine AI-driven educational approaches.

**Keywords:** Artificial Intelligence (AI), Communication Education, Language Proficiency, Educational Strategies, Qualitative Research.

# AICP037: Impact of Artificial Intelligence (AI) on the Quality of Research by Academic Staff of Universities in Taraba State

Amaechi, Appolus Azunwanne[1,a], Gregory, Deborah Mallo[1]
[1] Department of Science Education, Faculty of Education, Federal University Wukari, Taraba State, Nigeria
[a] Correspondence: apostleamaechi@yahoo.com

## Abstract

The role of Artificial Intelligence (AI) in academic research has gained significant attention in recent years, transforming the research landscape through machine learning techniques and data analytics. This study examined the impact of AI on the quality of research conducted by academic staff in universities in Taraba State, Nigeria. Guided by three research questions and one null hypothesis, the study employed a descriptive survey research design. The population consisted of 920 academic staff from Federal University Wukari, with a stratified random sample of 150 respondents (male and female) selected. Data were collected using a researcher-developed questionnaire titled *Impact of Artificial Intelligence on Academic Research Questionnaire (IAIARQ)*, structured on a modified four-point Likert scale. The instrument's reliability, determined via Cronbach's alpha, ranged from 0.76 to 0.82, while face validation by experts yielded a validation index of 0.85. Data analysis involved percentage scores, mean, and standard deviation, with Chi-Square ($X^2$) tests conducted at a 0.05 significance level. Results indicated that most academic staff were not utilising AI for research due to limited awareness, despite acknowledging its potential as a valuable tool. The study recommended that universities in Taraba State, in collaboration with the Ministry of Innovation and Digital Economy, should organise workshops to train academic staff on AI applications in research to enhance outcomes and alleviate the challenges of data analysis.

**Keywords:** Artificial Intelligence (AI), Quality of Academic Research, Academic Staff, Universities.

# AICP038: Artificial Intelligence in Science Technology, Engineering and Mathematics (STEM) Curriculum Delivery in Nigeria: A Systematic Literature Review

Haris Salisu Usman[1,a], Abdulmumini Aliyu Cheledi[1]
[1] Department of Science Education, Abubakar Tatari Ali Polytechnic, Bauchi, Bauchi State, Nigeria
[a] Correspondence: harisusalisu.svte@atapoly.edu.ng

## Abstract

The rapid evolution of artificial intelligence (AI) technologies presents transformative potential across various domains, including teaching, learning, and curriculum delivery. This dynamic landscape necessitates a review of the application of Artificial Intelligence in Education (AIED), particularly in the delivery of Science, Technology, Engineering, and Mathematics (STEM) curricula in Nigeria. This paper investigates current trends in STEM curriculum delivery, distinguishing it from conventional education while addressing the evolving needs of 21st-century learners. It explores the use of advanced technologies such as Natural Language Processing (NLP), Machine Learning (ML), Adaptive Learning Algorithms, and Artificial Intelligence-based Robots in Education (AIRE) within STEM education. Despite efforts to integrate 21st-century technologies into general curriculum delivery, the literature reveals significant gaps in their application within STEM education. The study highlights strategies for leveraging these technologies in STEM curriculum delivery and their contributions to national development. Key recommendations include redesigning the STEM curriculum to incorporate 21st-century technology tools through collaboration between the National Information Technology Development Agency (NITDA) and the Nigerian Educational Research and Development Council (NERDC). Additionally, comprehensive training programs should be established to equip STEM educators with the skills needed to effectively integrate these technologies into their teaching practices.

**Keywords:** Artificial Intelligence (AI), 21st-Century Technology, STEM, Curriculum Delivery.

# AICP039: Generative AI and the Future of e-Government Implementation in Developing Countries

Abdulrazaq Kayode Abdulkareem[1,a], Abdulrasaq Ajadi Ishola[1], Mohammed Lawan Bello[1], Abdulhakeem Adejumo[2]
[1] Department of Public Administration, University of Ilorin, Nigeria
[2] Department of Political Science, Federal University Dutse, Nigeria
[a] Correspondence: abdulkareem.ka@unilorin.edu.ng

## Abstract

The advent of large language models and generative AI presents new opportunities and challenges for e-government research in developing countries. As these technologies become more powerful and accessible, developing countries have the chance to leverage them to improve public services, increase civic participation, and support data-driven policymaking. However, there are also risks around issues like bias, misinformation, and job displacement. This paper reviews the current state of generative AI and its potential applications in the e-government domain, with a specific focus on developing countries in regions like Africa. It examines use cases around automating bureaucratic processes, enabling personalized service delivery, analyzing citizen feedback at scale and participation. The risks around bias, fairness, and transparency are also analyzed as these AI systems take on roles that impact social outcomes. The paper argues that despite legitimate concerns, thoughtful application of generative AI may accelerate progress by overcoming resource barriers and improving access to critical services and fast-tracking participation of citizens in public policy making. An agenda for further research at the intersection of generative AI, e-government, and international development is also outlined. This includes studying impacts on jobs, surveying citizen attitudes in developing countries, and building citizens trust to validate these technologies for policy contexts. Therefore, policy recommendations are provided for developing country governments on how to harness generative AI responsibly and equitably while building capacity in this emerging technology.

**Keywords:** Generative AI; E-Government; Citizens' Trust; Civic Participation; Service Delivery.

# AICP040: Incorporating Artificial Intelligence into Higher Education Physics Instruction: Confronting Obstacles and Augmenting Educational Outcomes

Momoh Hameed Adavize[1,2,a], Abdulraheem Suberu Adams[2], Kabiru Alhaji Bala[1,3]
[1] School of Physics, Universiti Sains Malaysia, 11800, Penang, Malaysia
[2] Department of Physics, Confluence University of Science and Technology, Osara, Kogi State, Nigeria
[3] Department of Physics, School of Secondary Education, Federal College of Education Zaria, Kaduna State, Nigeria
[a] Correspondence: adavizehameed@gmail.com

## Abstract

Physics education is crucial for developing scientific literacy, critical thinking, and problem-solving skills among students at secondary and tertiary levels. However, in Nigeria, traditional teaching methods face challenges that hinder students' understanding and performance, particularly in their first year at universities, polytechnics, and colleges of education. Many students struggle with fundamental physics concepts such as mechanics, waves, optics, electricity, and magnetism due to weak foundations from secondary education. This often leads to poor academic outcomes in physics, a core course for science, engineering, and medical students. Artificial intelligence (AI) offers promising solutions by enhancing understanding of abstract concepts, providing personalized learning, and ensuring inclusivity and effectiveness in physics education. This study explores the challenges in teaching and learning physics in early tertiary education, emphasising the role of AI tools such as intelligent tutoring systems, virtual laboratories, and automated assessments in addressing these issues. It also discusses the preparations needed and potential obstacles to integrating AI into physics education in Nigeria.

**Keywords:** Artificial Intelligence, AI, Physics, Tertiary Education, Higher Education.

# AICP041: AI-Driven Approaches to Assessing and Improving Educational Outcomes in Computer Science

M. Z. Bello[1], B. Y. Idris[2], S. M. Tahir[1], A. Jacob[1], U. Musa[3]
[1] Federal Polytechnic Mubi, Adamawa State
[2] BUA Cement Schools, Sokoto, Sokoto State
[3] Federal College of Education, Gidan Madi, Sokoto State

## Abstract

The rise of artificial intelligence (AI) has triggered significant changes across multiple fields, with computer education being notably affected. This article examines how AI is being integrated into education, particularly in computer science, and its potential to revolutionize teaching and learning methods. AI-driven approaches are reshaping assessment practices and improving educational outcomes. The article highlights adaptive learning systems that assess student performance, adjust coursework, and offer personalized learning experiences. Intelligent Tutoring Systems (ITSs) use AI to provide real-time feedback, automated assessments, and tailored education, addressing the limitations of human tutoring. Predictive analytics, powered by machine learning, help identify at-risk students early, allowing for timely interventions. AI-powered automated grading systems streamline grading, save instructors time, and improve the overall learning experience. Gamified learning platforms with AI features enhance student engagement by adapting game dynamics to individual progress, leading to better educational outcomes. The article also discusses the use of virtual laboratories and simulations in science education, showcasing their transformative role in providing hands-on learning experiences and improving problem-solving skills in computer science.

**Keywords:** Artificial Intelligence, Computer Education, Intelligent Tutoring Systems, Adaptive Learning, Virtual Laboratories.

# AICP042: Artificial Intelligence in Drug Discovery: Revolutionizing the Pharmaceutical Industry

A. H. Ahmed
Department of Phamacognosy and Ethnopharmacy, Faculty of Pharmaceutical Sciences, Usmanu Danfodiyo University, Sokoto, Nigeria
Correspondence: aliyu.hamidu@udusok.edu.ng

## Abstract

Artificial intelligence (AI) has revolutionized the pharmaceutical industry by significantly speeding up and improving the drug discovery process. AI systems use advanced machine learning algorithms to analyse large datasets, including genomic, proteomic, and pharmacological data, to identify new therapeutic targets and predict the effectiveness and safety of compounds. Techniques such as deep learning and neural networks help simulate drug behaviour and interactions within biological systems, enhancing drug screening accuracy. Key AI tools in drug discovery include deep learning platforms like ReLeaSE, ChemVAE, and Graph INVENT, along with molecular simulation tools, drug repurposing algorithms, and predictive analytics for clinical trials. These tools support various stages of drug discovery, from target identification to preclinical testing. Notable drug developments using AI include Haloperidol Redux, DSP-1181, and Baricitinib for COVID-19. However, AI faces challenges such as data issues, reproducibility, and model appropriateness, though its impact on the industry remains transformative.

**Keywords:** Artificial Intelligence, Drug Discovery, Machine Learning, Pharmaceutical Industry.

# AICP043: Understanding the Role of Artificial Intelligence in Econometrics: Interpretable Models for Economic Decision-Making

Bello, Lawali Zoramawa
Department of Economics, Faculty of Management and Social Sciences,
Sokoto State University, Sokoto, Nigeria
Correspondence: lawalbello.zoramawa@ssu.edu.ng

## Abstract

This study explores the transformational impact of artificial intelligence (AI) on the field of econometrics, focusing on the growing synergy between advanced machine learning techniques and traditional econometric methods. As AI technologies evolve at an unprecedented pace, their integration into econometric analysis is rapidly increasing. The study employs a desk review methodology to examine various AI technologies, particularly machine learning algorithms and deep learning models, to uncover their ability to identify intricate patterns within economic data, providing a more nuanced understanding of economic relationships. Additionally, the study investigates the practical applications of AI in econometrics, such as forecasting, causal inference, and policy analysis, using case studies to demonstrate how AI-driven econometrics enhances prediction accuracy and contributes to more informed decision-making in economic policy. The study concludes that the role of AI in econometrics is not a one-size-fits-all solution, and its impact depends on the careful consideration of various factors.

**Keywords:** AI, Econometrics, Machine Learning, Interpretable, Decision-Making.

# AICP044: Application of Artificial Intelligence in Diagnostic Medical Imaging and Radiotherapy

Buhari Samaila[1,a], Sabiu Abdullahi[2], Hussaini Ahmed[3], Buhari Maidamma[1]
[1] Department of Physics with Electronics, Federal University Birnin Kebbi, Kebbi State
[2] Department of Radiology, Federal Medical Centre Gusau, Zamfara State
[3] Department of Physics, Federal University of Health Sciences Azare, Bauchi State
Correspondence: buhari.samaila@fubk.edu.ng

## Abstract

Artificial intelligence (AI) is rapidly transforming healthcare, especially in diagnostic imaging and radiotherapy. The integration of AI in these fields has led to significant advancements, revolutionizing healthcare practices. This review explores its applications, highlighting its potential to improve accuracy, streamline workflows, and enhance patient outcomes. A systematic literature search identified studies on AI's role in image analysis, pattern recognition, decision support, and treatment planning. In diagnostic imaging, AI excels in modalities like MRI, CT, and PET, enhancing image interpretation, aiding early detection, and predicting treatment responses. In radiotherapy, AI automates treatment steps, with machine learning algorithms efficiently contouring target volumes and organs at risk, aiding optimal planning. Real-time image guidance and AI-driven adaptive radiotherapy improve precision and safety. AI-based predictive models also assist in assessing outcomes and optimizing treatment strategies, ultimately enhancing patient care. Despite advancements, challenges such as data privacy, standardization, and ethical concerns remain. This review highlights AI's transformative role in diagnostic imaging and radiotherapy, emphasizing its potential to revolutionize disease diagnosis and treatment planning, and usher in a new era of precision medicine.

**Keywords:** Artificial Intelligence, Medical Imaging, Radiation Therapy, Treatment Plan.

# AICP045: Role of Artificial Intelligence (AI) and Future of Teaching and Learning of Mathematics

Abubakar Attahiru
Department of Mathematics, Shehu Shagari College Of Education, Sokoto
Correspondence: aanaha2013@gmail.com

## Abstract

Artificial intelligence is the science of making machines that can think like humans. Artificial intelligence (AI) provides a chance to help teachers and students to solve and improve teaching and learning performances. The paper focused on the Role of artificial intelligence (AI) and future of teaching and learning of mathematics. This paper was highlighted the meaning of mathematics and Artificial intelligence, future of AI in Mathematics, importance of the integration of ICT in teaching and learning of mathematics, Machine learning, mathematics used in machine learning, Problems of Artificial Intelligence, benefit of mathematics in Artificial intelligence, Mathematical Setting of Artificial Intelligence, role of AI for solving mathematics, role of Artificial intelligence for teachers and students, also strong foundation in mathematics is required. The paper concludes that every mathematician needs to study how to apply Artificial intelligence to solve mathematical problems. Finally, meaningful suggestions are given.

**Keywords:** Role, Artificial, Intelligence, (AI) Future, Teaching, Learning, Mathematics.

# AICP046: Unveiling the Crossroads: Challenges and Opportunities in Applying AI to Tertiary Education Research

Ahmad Muhammad Nasir
Department of Mathematics, Shehu Shagari College of Education, Sokoto
Correspondence: amnlecturer@gmail.com

## Abstract

The rapidly growing presence of Artificial Intelligence (AI) in education promises a transformative shift in teaching, learning and research. However, this exciting future holds inherent challenges that must be navigated with careful consideration. This paper looks into the potential pitfalls and unforeseen consequences of integrating AI into tertiary educational research. The paper explores the impact of AI on the role of educators and researchers, highlighting the ethical concerns, overreliance and the need for robust teacher training and support. By examining these challenges through a critical lens, the paper aims to foster thoughtful discussion about the responsible implementation of AI in education especially educational research. Ultimately, this paper argues that harnessing the potential of AI requires a balanced approach that prioritizes ethical considerations, promotes inclusive access, and safeguards the irreplaceable role of human interaction in the learning process. By carefully mitigating the challenges, AI can become a powerful tool for enhancing educational experiences for all learners, while upholding the core values of a truly human-centered education.

**Keywords:** Artificial Intelligence, Tertiary Education Research, Challenges, Opportunities.

# AICP047: Assessing Awareness on the Use of Artificial Intelligence Tools among Primary School Teachers in Some Selected Schools in Sokoto Metropolis

Jibril Muhammad Bodinga[1,a], Hajara Abdulkadir[1], Muhammad M. Bodinga[2], Yusuf Firdausi Muhammad[3], Aisha Muhammad Bodinga[4]
[1] Department of Computer Science, Federal College of Education, Gidan Madi, Sokoto, Nigeria
[2] Department of Fine and Applied Arts, Shehu Shagari College of Education, Sokoto, Nigeria
[3] Forth Educational Services Ltd.
[4] Sokoto State Teachers Service Board
[a] Correspondence: jibsonbodinga@gmail.com

## Abstract

This study examined the awareness of primary school teachers on the existence of Artificial Intelligence tools that could be used to support children understanding as well as the use of such tools for enriching the teaching and learning. The study covers some selected primary schools within Sokoto metropolis. Four research questions were formulated to guide the study using a structured questionnaire to gather quantitative data. Descriptive statistics, including means, frequencies, and percentages, were calculated to derive conclusions. The study finds that: primary school teachers are not aware of the existence of Artificial Intelligence tools; do not have formal training on the use of AI tools; do not utilized AI tools for teaching, learning, academic and administrative purposes. The study recommends that; The State government, through the State Universal Basic Education Board (SUBEB) should improve on its computer literacy program for teachers and organize seminars and workshops on the benefits of AI in our schools; individual teachers should also endeavour to get training on AI and its benefits in our schools; the media and parents should do more to sensitize educational authorities and teachers on the benefits of AI in contemporary educational system; well-to-do individuals and non-governmental organizations can also intervene by sponsoring or encouraging the use of AI in our schools.

**Keywords:** Assessment, Awareness, Artificial Intelligence, Tools, Primary School Teachers, Sokoto Metropolis.

# AICP048: Artificial Intelligence and Academic Integrity: Opportunity or Threat?

Abubakar Yakubu[1,a], Zulkifli Abbas[2], Isa Musa[3], Suleiman Sahabi[4], Muntassir Labbo Jega[2]
[1] Department of Physics, Kebbi State University of Science and Technology, Aliero
[2] Department of Physics, Universiti Putra Malaysia, Serdang, Selangor, Malaysia
[3] Department of Science Education, Kebbi State University of Science and Technology, Aliero
[4] Department of Sciences, Kebbi State Polytechnic, Dakingari
[a] Correspondence: abulect73@gmail.com

## Abstract

Education plays a key role in shaping an individual's character, particularly in fostering honesty, ethical conduct, and academic integrity. However, the rise of artificial intelligence (AI) has brought new challenges to maintaining these values. This raises the question: Does AI present opportunities or threats to academic integrity? This communication examines how universities can encourage the ethical use of AI tools to enhance learning while preventing misconduct. The debate surrounding generative artificial intelligence (GenAI) has sparked diverse opinions in higher education, social media, and blogs, with unresolved issues related to AI in research and classrooms. While AI offers potential to revolutionize education by catering to individual learning needs, it also raises ethical concerns. Key questions include: What impact does AI have on academic integrity? Can technology facilitate cheating? How should AI-generated data be integrated into teaching and learning? As AI tools like ChatGPT become more common, institutions must adapt their teaching methods and address the associated ethical challenges. The ongoing debate highlights whether AI represents a threat or an opportunity for higher education.

**Keywords:** Academic Integrity, Artificial Intelligence, Generative AI, Ethical Conduct.

# AICP049: Artificial Intelligence (AI) as Academic Research Transformation

Usman Sani K. K.[1,a], Musa Halimatu Fago[1]
[1] Department of Pure and Industrial Chemistry, Faculty of Natural and Applied Sciences, Umaru Musa Yar'adua University, Katsina
[a] Correspondence: usmansanikk99@gmail.com

## Abstract

Many lecturers, students, and scholars in general are facing a huge difficulty when conducting research. Compiling and gathering the information discovered takes a long time, resulting in significant expenditure and time consumption. This research investigates the multifaceted impact of Artificial Intelligence (AI) on academic research methodologies. As AI technologies continue to evolve, they play a pivotal role in streamlining processes, enhancing data analysis, and uncovering intricate patterns within vast datasets. The study delves into the efficiency gains achieved by automating routine tasks while also addressing ethical considerations and the imperative for interdisciplinary collaboration. By scrutinizing the transformative landscape of academic research, this research aims to provide insights into harnessing AI's potential while navigating challenges in the pursuit of knowledge. Literature was reviewed in relation to AI studies. Findings from the present study show that AI could be applied in various academic sectors to help and assist scholars in every academic discipline. It is justified that the use of Artificial Intelligence in academic research will bring a versatile transformation in the academic system.

**Keywords:** Artificial Intelligence, Academic, Research.

# AICP050: The Integration of Artificial Intelligence as a Catalyst for Innovative Chemistry Teaching and Learning

Y. B. Idris[1,a], I. Lawal[1], T. Mukhtar[2], B. M. Zaharadeen[3], M. Usman[4]
[1] Science Department, BUA Cement Schools, Sokoto, Nigeria
[2] Faculty of Science, Department of Pure and Industrial Chemistry, Sokoto State University, Sokoto, Nigeria
[3] Faculty of Science, Department of Computer Science, Federal Polytechnic Mubi, Adamawa, Nigeria
[4] School of Science, Department of Computer Science, Federal College of Education, Gidan Madi, Sokoto, Nigeria
[a] Correspondence: buyuid@gmail.com

## Abstract

The evolving nature of education demands continuous adaptation to meet students' changing needs. This research examines the role of artificial intelligence (AI) in education, focusing on its application in teaching and learning chemistry. Through library research, the study reveals that AI is integrated into various educational platforms, including virtual mentors, chemistry smart content, virtual laboratories, educational games, and personalized learning systems. AI offers the potential to revolutionize traditional teaching by automating routine tasks such as attendance, grading, and administrative reporting, enabling teachers to dedicate more time to nurturing students' character and critical thinking skills. While AI enhances systematic tasks, the study emphasises the irreplaceable role of human intelligence in delivering new knowledge and fostering creativity. Unlike natural intelligence, AI is a product of human ingenuity, designed to complement—not replace—educators. This research highlights AI as a valuable tool for teaching chemistry, envisioning a collaborative future where technology supports teachers in developing students' unique cognitive abilities.

**Keywords:** AI, Chemistry Education, Innovation.

# AICP052: Performance of Large Language Models (LLMs) in Radiation Protection Examination: Implications for the Future of Radiation Protection Education and Culture

Suleiman Bello[1,a], Simon John[2], Flavious Nkubli[3]
[1] Department of Physics, Umaru Musa Yar'adua University, Katsina, Nigeria
[2] Department of Physics, Ahmadu Bello University, Zaria, Nigeria
[3] Department of Radiology, University of Maiduguri Teaching Hospital, Maiduguri, Nigeria
[a] Correspondence: suleiman.bello@umyu.edu.ng

## Abstract

Radiation protection education is essential for ensuring the safe and effective application of radiation across various fields. With the emergence of large language models (LLMs) like OpenAI's GPT and Google's Bard, their impact on education and training has grown significantly. This study evaluates the performance of these LLMs using basic radiation protection undergraduate examination samples from several Nigerian universities. A dataset of five years' past examination questions from radiation protection and related courses was employed. The LLMs were assessed for accuracy, precision, and overall scoring against the examinations' marking schemes. The results showed that the models performed well overall, demonstrating a strong ability to understand and respond to radiation protection-related inquiries. However, challenges persist, particularly in addressing calculation-based problems. The findings highlight the potential of LLMs to enhance communication, improve expertise, and raise public awareness, while also addressing the ethical and unethical implications of their use.

**Keywords:** Radiation Protection Education, Large Language Models, Academic Performance Evaluation, Ethical Implications.

# AICP053: Perceived Generative Artificial Intelligence (AI) Utilization and Motivation among Biology Students in Sa'adatu Rimi College of Education Kumbotso, Kano State

Zubaida Hamza Muhammad[1,a], Zuwaira Yahaya Kansila[1],
Aisha Lawan Mato[1]
[1] Department of Biology, Sa'adatu Rimi University of Education, Kano State
[a] Correspondence: zubaidahamza26@gmail.com

## Abstract

Artificial Intelligence (AI) has been shown to enhance classroom learning by promoting deeper understanding rather than rote memorization. This study investigates the perception and motivation of biology students towards generative AI utilization at Sa'adatu Rimi College of Education, Kano State. Two research questions guided the study, and a descriptive survey research design was adopted. The population consisted of 2,393 biology students, from which a sample size of 333 was determined using the Research Advisor (2006) table. Stratified sampling and lottery-based simple random sampling techniques were employed. Data were collected using the *Biology Students' Perceived Generative Artificial Intelligence and Motivation Questionnaire (BSPGAIMAQ)*, which had a reliability coefficient of 0.89 and a validity coefficient of 0.87. Descriptive statistics were used to address the research questions. Findings revealed that the students had a positive perception of generative AI as a tool for deepening subject comprehension and were motivated to utilize it. It is recommended that biology students be further encouraged to adopt generative AI for enhanced learning and understanding.

**Keywords:** Biology Students, Generative AI, Motivation, Perception, Utilization.

# AICP054: AI and the Future of Teaching and Learning

Umar Adam I.
Nile University of Nigeria, Abuja
Correspondence: umaradamibrahim@nileuniversity.edu.ng

## Abstract

The rapid advancements in Artificial Intelligence (AI) are reshaping various facets of society, with education being a significant area of transformation. This paper explores the evolving landscape of teaching and learning in the context of AI, examining its current impact, potential benefits, ethical considerations, challenges, and future implications. It investigates AI's role in personalizing learning through adaptive platforms and intelligent tutoring systems, fostering engagement and improving educational outcomes. Ethical concerns such as privacy, bias, and transparency are discussed, stressing the importance of responsible AI integration in education. Case studies of successful AI applications in education are highlighted, alongside challenges like technological barriers and resistance to change. By addressing emerging trends and proposing future directions, this paper contributes to the discourse on AI's transformative role in shaping the future of education.

**Keywords:** Artificial Intelligence, Personalized Learning, Educational Technology, Ethical Considerations.

# AICP055: Impact of intelligent Tutoring on the Academic Achievement of Education Mathematics Students in Information and Communication Technology (ICT) in Education at Sokoto State University, Sokoto

Isah Maccido[1,a] Nasiru Muhammad Dogondaji[1]
[1] Sokoto State University, Sokoto, Nigeria
[a] Correspondence: isah.maccido20@gmail.com

## Abstract

The impact of intelligent tutoring on the academic achievement of Mathematics students in the realm of Information and Communication Technology (ICT) at Sokoto State University was explored in the study. Intelligent tutoring systems, driven by artificial intelligence, have been implemented to enhance the educational experience by providing personalized and adaptive support. This research investigated how these systems influence the learning outcomes of Mathematics students in the context of ICT in education. The study delves into the effectiveness of intelligent tutoring in addressing individual student needs, offering tailored guidance, and adapting instructional content based on real-time performance data. Through the analysis of student progress, the research aims to discern the impact of intelligent tutoring on academic success and the development of ICT skills. Additionally, the study considers the potential challenges and opportunities associated with integrating intelligent tutoring systems into the educational environment at Sokoto State University. The findings contribute to the broader understanding of the role of AI-driven tutoring in fostering enhanced learning outcomes and technological proficiency among Mathematics students in higher education.

**Keywords:** Intelligent Tutoring, Academic Achievement, Mathematics Students, ICT.

# AICP056: Artificial Intelligence and the Future of Teaching and Learning

Raji, Yunusa Rukayya
Department of Educational Foundations, Faculty of Education and Extension Services, Usmanu Danfodiyo University, Sokoto State, Nigeria
Correspondence: rajirukayya@gmail.com

## Abstract

This paper discussed Artificial Intelligence (AI) and the future of teaching and learning. The concepts of Artificial Intelligence, teaching, and learning were defined. Uses of AI in Teaching and learning processes such as lesson plan creation; differentiated learning; auto grading; administrative, and task automation were explained. Prospects or effects of artificial intelligence on teaching and learning including personalized learning; adaptive learning platforms; and teacher professional development were listed and explained. Problems of artificial intelligence in teaching and learning explained include lack of access and infrastructure or digital divide; inadequate teacher training (Skills Gap); and resistance to change or cultural and institutional resistance. Some suggestions were given and they include implementing initiatives to bridge the digital divide; providing equal access to technology and good internet service for all teachers and students irrespective of socio-economic background; investing in professional development programs for teachers to improve their skills in using artificial intelligence tools effectively and efficiently in the classroom; encourage a culture of collaboration, cooperation, and involvement among teachers, students, parents, and administrators to address issues; provide education, and encourage acceptance of artificial intelligence in education.

**Keywords:** Artificial Intelligence, Education, Teaching and Learning.

# AICP057: Application of Artificial Intelligence in Accelerating Scientific Discoveries in Chemistry Education

Ahmed, A.[1,a], Abdussalam, L. H.[1]
[1] School of Secondary Education, Sciences, Federal College of Education, Katsina, Nigeria
[a] Correspondence: ali.ahmedgumel2011@gmail.com

## Abstract

Artificial Intelligence (AI) has emerged as transformative technology with the potential to revolutionize various fields, including education and scientific research. In the domain of chemistry education, Artificial Intelligence (AI) has been increasingly utilized to accelerate the process of scientific discovery, enabling both students and researchers to access vast amounts of data, analyze complex chemical systems, and generate novel insights that can propel advancements in the field. This paper explores the application of Artificial Intelligence (AI) in chemistry education notably in areas such as virtual laboratories and simulation, predictive models for Drug discoveries, Intelligent Tutoring systems (ITS) as well as Natural Language Processing for Literature Mining (NLP). It begins by highlighting the challenges faced in traditional approaches to chemical research and education, such as the time-consuming, nature of experimental work, the limitations of human capacity in handling large datasets, and the need for efficient data analysis and prediction tools.

**Keywords:** Artificial, Intelligence, Scientific, Discovery, Accelerating.

# AICP058: Causes of Disavowal to Artificial Intelligence (AI) among Academics in Institutions of Higher Learning In Nigeria

Muhammad Nuraddeen Danjuma
Department of Geography, Bayero University Kano, Nigeria
[a] Correspondence: mndanjuma.geog@buk.edu.ng

## Abstract

Artificial Intelligence (AI) has significantly transformed various industries, including education, offering immense potential benefits, particularly in developing countries like Nigeria. However, many educators in Nigerian higher institutions resist adopting AI technologies, posing challenges to its integration. This paper explores the reasons behind this resistance and its implications for higher education in the country. Factors contributing to the disavowal include a lack of awareness and understanding of AI, apprehension about its impact on teaching roles, limited access to technology infrastructure, and insufficient training opportunities. Additional concerns include fears of job displacement, privacy issues, data security, and algorithm biases. Despite these challenges, AI presents opportunities to enhance teaching and learning. Addressing educators' concerns through comprehensive awareness campaigns, training programs, and their involvement in AI implementation can empower them to harness AI as a tool for improving educational outcomes and student engagement in Nigerian higher education.

**Keywords:** Artificial Intelligence, Education System, Higher Learning.

# AICP059: Assessment of Lecturers' Utilisation of Artificial Intelligence for Education in a Nigerian University

Thomas, Glory[1,a], Gambari, Amosa Isiaka[1], Sobowale, Favour Mosunmola[1], Manji, Berechiah Samson[1], Shehu, Bala Alhaj[2]
[1] Department of Educational Technology, Federal University of Technology, Minna, Nigeria
[2] Department of Curriculum & Instructional Technology. Niger State College of Education, Minna, Nigeria
[a] Correspondence: otinameglory@gmail.com

## Abstract

This study assessed lecturers' utilisation of Artificial Intelligence (AI) for education in a Nigerian university. The study adopted a descriptive survey research design. A sample of 271 lecturers were selected using Proportionate Stratified Randomly Sampling Technique. A researcher-designed structured questionnaire was used for data collection that was validated by four experts and pilot tested a reliability coefficient of 0.82 was obtained. Findings of the study revealed that lecturers rarely used AI with a grand mean of 1.85. Independent samples t-test analysis showed that $t = 1.730$, $p > 0.085$ indicating no significant difference in the mean response of male and female lecturers' level of utilisation of AI. In light of the findings, it was recommended among others that University management should regularly organise hands-on and professional training programmes and retreat for lecturers to teach with and effectively use AI.

**Keywords:** Lecturers, Utilisation, Artificial intelligence, University.

# AICP060: A History of Artificial Intelligence and Future Implications on Nigeria Educational Transformation

Sirajoddeen Al-Ameen[1,a], Jamilu Adamu[2]
[1] Department of History, Shehu Shagari College of Education, Sokoto
[2] Department of Geography Shehu Shagari College of Education, Sokoto
[a] Correspondence: sirajoddeenalameen@gmail.com

## Abstract

Artificial Intelligence (AI), a field studied for decades, remains one of the most complex and evolving areas in Computer Science. Coined by John McCarthy in 1956 during the first academic conference on the topic, AI encompasses a wide range of applications, from advanced thinking machines to simple algorithms. Despite its vast potential, debates over whether machines can truly "think" have sparked opposition, especially in life-critical areas like education, where trust in AI systems is crucial. In recent years, AI has significantly influenced education, transforming teaching and learning processes by offering adaptive and innovative methods. This paper explores the history of AI, its impact on educational transformation in Nigeria, and its potential to improve experiences for students and teachers. Using a peer-reviewed methodology, the study highlights the historical journey of AI, its implications for education, and provides actionable recommendations for integrating AI effectively in the educational sector.

**Keywords:** Artificial Intelligence, Education, Transformation, Future, Implications.

# AICP061: Improved Local Search-Based Hybrid Ant Colony Optimisation Scheme for Task Scheduling in Cloud Computing

Rukayya Muhammed Maigwanjo; Yale Ibrahim Danjuma; Danlami Gabi
Kebbi State University of Science and Technology, Aliero

## Abstract

The inefficiencies of traditional scheduling methods adversely affect Quality of Service (QoS) expectations, making it imperative to develop more efficient approaches. Conventional methods often fail to meet customer satisfaction, prompting recent research into metaheuristic techniques for scheduling problems. While promising, these techniques face challenges like premature convergence and local optima breakdown due to vast solution search spaces. This study introduces an Improved Local Search-Based Hybrid Ant Colony Optimization (ILS-HACO) approach to address these challenges and enhance task scheduling efficiency. The proposed method integrates Simulated Annealing (SA) into the local search component of ILS-HACO, improving convergence speed and reducing the likelihood of being trapped in local optima. Performance evaluation, conducted on the CloudSim simulator platform with task instances ranging from 200 to 1000, uses Makespan time as a key metric to validate the approach.

**Keywords:** Task Scheduling, Ant Colony Optimization, Simulated Annealing, Quality of Service (QoS).

# AICP062: Impact of Artificial Intelligence on Academic Staff Performance of Universities in Southeast Nigeria

Uzozie Henrietta Chinasa
University of Nigeria Nsukka, Enugu Campus

## Abstract

This study examines the impact of artificial intelligence (AI) on the performance of academic staff in universities in South-East Nigeria. The objectives were to assess the extent to which AI enhances teachers' productivity, its influence on teaching effectiveness, and its effect on professional development. The study population comprised 8,592 staff members from selected universities, with a sample size of 383 determined using Stat Trek's (2004) statistical formula. Data were collected via questionnaires validated by research and AI experts, with reliability tested using Cronbach Alpha. Analysis using z-tests and regression at a 5% significance level revealed that AI significantly enhances teachers' productivity, improves teaching effectiveness, and supports professional development. The study concludes that AI is a valuable tool for boosting academic staff performance and recommends that universities incorporate AI-related courses into their curriculum to equip staff with the skills needed to utilise AI in teaching and research.

**Keywords:** Artificial Intelligence (AI), Academic Staff Performance, Productivity, Effectiveness, Professional Development.

# AICP063: Development of Machine-Learning Based Algorithm for Weather Prediction Using Sensor Data from an IoT Weather Station

Jimoh, A. A.[1,a], Iromini, N. A.[2], Ibrahim M. A.[3],
Mafe, A. S.[4], Adeniran, R. T.[5]
[1] Department of Electrical & Electronics Engineering, Federal Polytechnic Offa, Nigeria
[2] Department of Computer Engineering, Federal Polytechnic Offa, Kwara State, Nigeria
[3] Department of Computer Science, Federal Polytechnic Offa, Nigeria
[4] Department of SLT, Federal Polytechnic Offa, Nigeria
[5] Department of Library and Information Science Department
[a] Correspondence: abdulramon.jimoh@fedpoffaonline.edu.ng

## Abstract

This research introduces an innovative approach to weather prediction by utilising machine learning (ML) algorithms to analyse sensor data from an Internet of Things (IoT) weather station. Traditional methods, which depend on numerical weather models, often face limitations in accuracy and computational efficiency. By integrating ML with high-resolution IoT sensor data, this study aims to improve the precision and timeliness of forecasts. The IoT weather station architecture includes sensors that measure key meteorological parameters such as temperature, humidity, atmospheric pressure, wind speed, and precipitation, generating continuous data streams for ML algorithm development. The algorithm's performance was rigorously evaluated using historical and real-time weather data. The study demonstrates that ML can significantly enhance the accuracy and efficiency of weather forecasts, addressing challenges related to weather-related events and offering practical benefits across various sectors.

**Keywords:** Algorithm, Internet of Things (IoT), Machine Learning, Sensor Data, Weather Station.

# AICP064: Ethical Dilemmas in Applying AI to Education

Isah Saminu Kanoma[1,a], Faru Abubakar Abdullahi[2],
Nasir Aliyu Sarkin Noma[1], Abdulrahman Ibrahim[3]
[1] ICT/MIS Directorate, Federal University Gusau, Zamfara State, Nigeria
[2] Department of Computer Science, Federal Polytechnic Kaura Namoda, Zamfara State, Nigeria
[3] ICT/MIS Directorate Abdu Gusau Polytechnic Talata Mafara, Zamfara State, Nigeria
[a] Correspondence: sikanoma4u@gmail.com

## Abstract

The rapid advancement of Artificial Intelligence AI has presented exciting opportunities for innovation in education. However, the implementation of AIED in education settings necessitates careful consideration of ethical implications to ensure a balance between innovation and responsibility. AIED refers to the use of AI (Artificial Intelligence) technologies or application programs in educational settings to facilitate teaching, learning, or decision making. With the help of AI technologies enable computer systems to make predictions, judgements and references that are equivalent to those of a human. AI can also help teachers, policymakers make decisions by giving students individualized advice, support, and feedback. AI has the ability to completely transform educational landscape by tailored and flexible learning opportunities. Educational systems can assess data to detect learning gaps and implement targeted interventions by exploiting technology such as machine learning and data analytics. AS AIED continues to revolutionize teaching and learning, becomes imperative to navigate the intricate ethical landscape that accompanies its deployment. The research explores the delicate balance between fostering innovation through AI technologies and upholding ethical responsibilities to ensure the well-being and privacy of students and educators. By examining real-world cases and ethical frameworks, this investigation aims to shed light on the challenges and potential solutions in harnessing the power of AI in education ethically.

**Keywords:** Artificial Intelligence, Responsibility, Education, Innovation, Ethical, Students, Educators.

# AICP065: Bridging the Educational Gap Between Slow Learners through AI for Parity with Fast Learners

Abubakar Bello Sokoto[1,a], Murtala Abubakar[2], Ibrahim Bello[3]
[1] Department of Economics, Shehu Shagari University of Education, Sokoto
[2] Computer Section, State Universal Basic Education Board, Sokoto
[3] Department of Crop Science, Usmanu Danfodiyo University, Sokoto
[a] Correspondence: belloabubakar22@gmail.com

## Abstract

This study explores the use of artificial intelligence (AI) to bridge the educational gap between slow learners and their faster-learning counterparts. Using a methodology grounded in secondary data analysis, the research examines existing AI applications in education and evaluates their effectiveness in improving the academic progress of slow learners. Data were drawn from an extensive review of literature, educational databases, case studies, and government reports to identify successful AI-driven interventions. Through content analysis and comparative methods, the study distils insights and provides recommendations for optimising AI strategies to support slow learners. The findings highlight AI's potential as a transformative tool for fostering educational equity and advancing the academic success of slow learners, enabling them to achieve parity with their peers.

**Keywords:** Educational Equity, Artificial Intelligence, Slow Learners, Academic Advancement.

# AICP067: An Exploration of the Opportunities and Concerns in the Use of Artificial Intelligence and ChatGPT in Research

Amade Roberts Amana
Associate Professor of Law, Kampala International University in Tanzania
[a] Correspondence: amade.roberts@kiu.ac.ug

## Abstract

In recent years, the growth of Artificial Intelligence (AI) and its varied applications have rapidly transformed the character of global education. ChatGPT, a remarkable tool of AI has revolutionized the way man interacts with machines. ChatGPT employs user prompts to generate cohesive and coherent human-like responses to instructions. This paper explores the emergence of AI and its wide-ranging applications to education. It investigates the opportunities and prospects of AI, as well as the critical issues resulting from its use, including digital privacy, cybersecurity, ethics, liability for damage caused by AI, plagiarism and copyright. It is therefore imperative to attempt a counterbalance between optimism in AI applications, and their potential drawbacks. The paper further assesses existing policy and normative frameworks for the operation of AI and serves as a contribution to the discourse on the emerging field of AI and its use in research.

**Keywords:** Artificial Intelligence, ChatGPT, Research, Digital Privacy, Cybersecurity, Ethics.

# AICP068: Artificial Intelligence: A Full Potential for Personalized Learning Approach in Science, Technology, Engineering, and Mathematics (STEM)

Umar, Yahaya Moriki[1,a], Bilyaminu, Abdullahi Alameen[2]
[1] Department of Science & Vocational Education, Faculty of Education & Extension Services, Usmanu Danfodiyo University, Sokoto, Nigeria
[2] Usmanu Danfodiyo University, Sokoto, Nigeria
[a] Correspondence: yahayamoriki22@gmail.com

## Abstract

This paper examines the potential of artificial intelligence (AI) to revolutionize personalized learning in Science, Technology, Engineering, and Mathematics (STEM) education. AI involves developing intelligent systems capable of performing tasks that typically require human intelligence, such as natural language processing, pattern recognition, and data-driven decision-making. The COVID-19 pandemic showcased AI's efficiency across various sectors, including its role in sustaining education and mitigating disruptions. In STEM education, AI offers transformative possibilities by personalizing teaching methods, delivering timely feedback, and automating administrative tasks. This paper highlights the application of AI tools in teaching and learning, the significance of AI in enhancing science education, and the challenges of integrating AI into educational practices. The findings emphasise AI's capacity to enable personalized learning, empowering students to construct and discover knowledge independently. The paper recommends that STEM educators and students adopt AI tools to foster personalized learning and improve STEM education outcomes.

**Keywords:** Personalized Learning, Artificial Intelligence, STEM Education, AI Tools Integration.

# AICP070: The Transformative Role of Artificial Intelligence in Shaping the Future of Education: Scholarly Perspectives

I. Musa[1,a], A. Yakubu[2], M. Danjuma[3], K. Samaila[1], A. Umar[4], Z. A. Gwandu[3]
[1] Department of Science Education, Kebbi State University of Science and Technology, Aliero, Nigeria
[2] Department of Physics, Kebbi State University of Science and Technology, Aliero, Nigeria
[3] Department of Education, Kebbi State University of Science and Technology, Aliero, Nigeria
[4] Department of Statistics, Kebbi State University of Science and Technology, Aliero, Nigeria
[a] Correspondence: isahmusa0081@gmail.com

## Abstract

The integration of Artificial Intelligence (AI) in the field of education has attracted significant attention from scholars, educators and policymakers, due to its promising state in the reforming of traditional educational practices and enhanced learning outcomes. This paper explored the diverse role that AI plays in influencing the trajectory of education in the future, by drawing insights from scholarly literature and current trends in the field. In the fleetly evolving aspect of education, AI technologies are increasingly influencing pedagogies for teaching and learning, as well as curriculum design and students' engagement. Thus, this paper was aimed at synthesizing a range of scholarly perspectives in order to explore how AI is reshaping educational practices, addressing challenges, and fostering invention to enhance teaching outcomes. The discussion encompassed the integration of AI in personalized learning, adaptive assessment tools, and intelligent tutoring systems. Moreover, ethical considerations and implicit societal impacts of AI in education was meditated. Through the synthesis of current scholarly perspectives, this paper contributed to a deeper understanding of the multifaceted impact of AI on education, furnishing precious perceptivity for educators, policymakers, and researchers as they navigate the dynamic crossroad of technology and learning.

**Keywords:** Artificial Intelligence, Education, Scholarly Perspectives, Pedagogies, Ethical Considerations, Personalized Learning.

# AICP073: Academic Research Using Artificial Intelligence: Views of Nigerian Academics on AI Powered Technologies

Abdul Mumin Rabiu
Dawakin Tofa Science College
Science & Technical Schools Board
Kano State, Nigeria

## Abstract

This study examines the use of artificial intelligence (AI) and machine learning technologies in Nigerian academia and explores academics' perceptions of their benefits and challenges. In-depth interviews were conducted with 25 academics to gather insights into their views on the integration of AI in research and education. The qualitative data were analysed to identify key themes and perspectives. The findings reveal that academics generally perceive AI as a valuable tool for advancing scientific research and enhancing educational processes. Specifically, AI-powered technologies are seen as instrumental in streamlining tasks like literature reviews, data analysis, and personalized learning. Despite these advantages, significant ethical concerns were identified, particularly around issues of plagiarism, misinformation, and biases in AI systems. While academics acknowledge the transformative potential of AI in academia, addressing ethical challenges is critical to ensuring its responsible and equitable integration. Strategies to mitigate risks and promote transparency are essential to maximize the benefits of AI while safeguarding academic integrity.

**Keywords:** Artificial Intelligence, Academic Perceptions, Ethical Challenges, Plagiarism, Machine Learning in Education.

# AICP075: Artificial Intelligence-Based Adaptive Learning: A Tool for Effective Teaching and Learning at Secondary School Level of Education in Nigeria

Babangida Ismaila[1,a], Suleiman, Aishatu Umar[2]
[1] Department of Arts and Social Science Education, Faculty of Education, Ahmadu Bello University, Zaria
[2] Department of Educational Foundation and Curriculum, Faculty of Education, Ahmadu Bello University, Zaria
[a] Correspondence: ismailababangida66@gmail.com

## Abstract

Artificial intelligence (AI) has transformed teaching and learning processes, opening new possibilities for both students and teachers at the secondary school level in Nigeria. This paper explores the role of AI-based adaptive learning in enhancing effective instruction, focusing on its impact on learners' experiences, teaching methodologies, and curriculum development. AI has become an essential tool in education, enabling teachers to adapt and personalise learning experiences to meet individual student needs. The study highlights how AI-based adaptive learning platforms enhance student engagement, improve learning outcomes, and address gaps in education.

**Keywords:** Artificial Intelligence, Academic Perceptions, Ethical Challenges, Plagiarism, Machine Learning in Education.

# AICP076: Deployment of Artificial Intelligence for Implementation of Tertiary Institutions' Programmes in Nigeria

Galadima, Farida Ibrahim[1,a], Ogunode, Niyi Jacob[2]
[1] Department of Adult and Continuing Education, Faculty of Education, Federal University Wukari, Wukari, Nigeria
[2] Department of Education Management, University of Abuja, Abuja, Nigeria
[a] Correspondence: galadima@fuwukari.edu.ng

## Abstract

This paper critically examines the deployment of artificial intelligence (AI) in the implementation of tertiary education programmes in Nigeria. Drawing on secondary data from print and online publications, the study finds that AI serves as an effective tool for enhancing teaching, research, and community service in Nigerian tertiary institutions. The findings highlight the potential of AI to improve the quality and efficiency of programme implementation. Consequently, the paper recommends that tertiary institution administrators prioritise the full integration of AI technologies and allocate sufficient financial resources to support AI development across all tertiary institutions in the country.

**Keywords:** Artificial Intelligence (AI), Tertiary Education, Programme Implementation, Educational Technology, Nigeria.

# AICP077: Application of Artificial Intelligence (AI) in Agricultural Research and Development in Nigeria: Prospects, Challenges, and the Path Ahead

Aliyu, M. K.[1,a], Owigho, O.[2], Faruk, A. U.[1], Adamu, M. E.[3],
J. Musa[4], Muhammad, I. S.[5]
[1] Department of Agricultural Extension and Economics, Ahmadu Bello University, Zaria
[2] Department of Agricultural Extension and Economics, Delta State University of Science and Technology, Ozoro. Delta State
[3] Department of Agricultural Extension and Economics, Federal University Gashua, Gashua, Yobe State
[4] Department of Agricultural Engineering and Irrigation, National Agricultural Extension and Liaison Services (NAERLS)
[5] Nigerian Institute for Trypanosomiasis Research (NITR) Kaduna State
[a] Correspondence: kabiramuhammad41@gmail.com

## Abstract

As the global population expands and climate change intensifies pressures on agricultural productivity, Nigeria, a key agricultural hub in Africa, faces a critical need to leverage technological innovations to ensure food security and sustainable development. This paper examines the application of Artificial Intelligence (AI) in agricultural research and development in the Nigerian context. It highlights the potential of AI technologies in areas such as precision farming, crop disease detection, yield prediction, and supply chain optimisation. Additionally, the paper explores the challenges impeding the adoption and integration of AI in Nigeria's agricultural sector, including infrastructural deficits, limited data availability, and socio-economic inequalities. Drawing on empirical evidence and academic insights, it proposes strategies to address these barriers, including policy reforms, capacity-building programmes, and public-private partnerships. The study also emphasises the importance of developing indigenous AI solutions tailored to Nigeria's diverse agro-ecological zones and smallholder farming practices. By analysing the interplay between AI and agricultural development, this paper provides a framework for stakeholders, policymakers, researchers, and practitioners to harness the transformative potential of AI in enhancing Nigeria's agricultural resilience and advancing towards a sustainable and inclusive agrarian future.

**Keywords:** Artificial Intelligence (AI), Agricultural Research and Development, Challenges, Sustainable Development, Nigeria.

# AICP078: The Influence of Artificial Intelligence in the Provision of Legal Services and Justice Delivery in Nigeria: Theory, Context, Opportunities, and Trends

Sulaiman Usman
Notary Public and Life Bencher, Founding Partner, Gamzaki Law Chambers
SDD 2, The Paradise Estate Katampe, Off Murtala Muhammed Expressway
(Behind Aso Radio Hill), Katampe, Abuja, Nigeria
Correspondence: info@gamzakilawchambers.com

## Abstract

As technological advancements in the 4th Industrial Revolution continue to transform various sectors, the legal industry is experiencing a paradigm shift due to the rising implementation of artificial intelligence (AI) systems. Artificial intelligence (AI) has become increasingly prominent in the provision of legal services, offering new opportunities and trends that are reshaping the legal landscape. By leveraging AI technology, legal professionals can streamline various processes and tasks, leading to increased efficiency and accuracy. This paper aims to explore the theory, context, opportunities, and trends surrounding AI's role in the provision of legal services and justice delivery in Nigeria bringing numerous benefits such as improved efficiency, reduced costs, enhanced accuracy, and increased accessibility.

**Keywords:** Artificial Intelligence (AI), Legal Services, Justice Delivery, Legal Technology.

# AICP079: Artificial Intelligence in Research: Maximizing Benefits and Minimizing Drawbacks

Sakina Ibrahim Bello[1,a], Isa Ali Ibrahim[1,a]
[1] Department of Industrial Chemistry, Nile University of Nigeria, Abuja, Nigeria
[2] Federal University of Technology, Owerri, Nigeria
[a] Correspondence: sakinabelobram@gmail.com , ibrahim.ali@futo.edu.ng

## Abstract

Artificial intelligence (AI) has become increasingly integral to research, offering both benefits and challenges. This paper explores the dual nature of AI in research, focusing on tools such as Scite.ai, Evidence Hub, Turnitin, Chat GPT, and referencing management software. We highlight the advantages of these tools, illustrating how AI enhances data analysis, facilitates literature reviews, and streamlines research processes. Additionally, we discuss the importance of referencing software such as Mendeley, Zotero, and EndNote, which automate bibliography management, simplify citations, and aid scholarly writing tasks. However, ethical concerns regarding data privacy, issues with maintaining academic integrity, and potential biases in AI algorithms pose notable challenges. These considerations underscore the need for careful utilization of AI in research. Despite these challenges, our research emphasizes the pivotal role of AI in advancing research. By maximizing its benefits while addressing its drawbacks, researchers can effectively harness the potential of AI to drive scholarly inquiry forward.

**Keywords:** Artificial Intelligence, Research, Benefits, Challenges.

*Published by:*
**Iconic Open University**
No. B1, Gusau Road, Sokoto
Sokoto State, Nigeria
www.iconicuniversity.edu.ng
+234 803 590 7892

ISBN 978-978-59014-5-0

ICONIC UNIVERSITY

OPEN, DISTANCE & E-LEARNING

**Published by:**
Iconic Open University
No. B1, Gusau Road, Sokoto
Sokoto State, Nigeria
www.iconicuniversity.edu.ng
+234 803 590 7892

ISBN 978-978-59014-5-0

9 789785 901450

www.iconicuniversity.edu.ng