Reimagining Edupreneurship with AI Technologies: Pathways to Modern Educational Excellence in Nigerian Tertiary Institutions

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Abstract
This study investigates the transformative potential of Artificial Intelligence (AI) technologies in revolutionizing edupreneurship to modernize Nigerian tertiary institutions. It examines critical systemic challenges, including inadequate funding, outdated curricula, poor infrastructure, and a shortage of skilled personnel, which collectively undermine the quality of educational delivery. The research explores how AI-driven solutions such as personalized learning experiences, administrative process optimization, and advanced data analytics can address these issues to enhance the relevance, efficiency, and accessibility of higher education. The study highlights the necessity of substantial government investment in technology infrastructure, curriculum reforms that incorporate AI literacy and computational thinking, and the modernization of educational facilities. Furthermore, it highlights the importance of continuous professional development programs to equip academic staff with the skills to integrate AI technologies effectively. Emphasis is placed on establishing robust policies to ensure the ethical, equitable, and sustainable implementation of AI, mitigating challenges such as the digital divide and data privacy concerns. Through advocating for a collaborative approach among government, educational institutions, industry stakeholders, and international partners, this research provides a roadmap for harnessing AI to transform Nigeria's higher education. It concludes that the integration of AI into edupreneurship has the potential to create a dynamic, resilient, and globally competitive educational system capable of meeting the demands of the 21st-century knowledge economy.

Keywords: Artificial Intelligence (AI), AI in Education, Edupreneurship

Introduction

In recent years, the intersection of entrepreneurship and education, known as edupreneurship, has emerged as a fundamental change reshaping the educational paradigm. Edupreneurship involves the use of entrepreneurial principles to develop innovative educational solutions that enhance learning outcomes and operational efficiencies within educational institutions (Monteiro et al., 2021). This fundamental change is particularly relevant in the context of higher education, where traditional teaching methodologies are increasingly seen as insufficient to meet the evolving demands of a globalized knowledge economy. By promoting a culture of innovation and adaptability, edupreneurship can significantly contribute to the modernization of tertiary education, addressing longstanding challenges such as access, quality, and relevance. Integrating AI technologies provides an innovative platform to advance edupreneurship further and enhance its impact.

The advent of Artificial Intelligence (AI) technologies presents a transformative opportunity for edupreneurship. AI comprises a range of technologies, including machine learning, natural language processing, and educational data mining, which can be harnessed to create personalized learning experiences, enhance administrative efficiencies, and improve educational outcomes (Walter, 2024). AI's ability to analyze vast amounts of data and generate information can facilitate more informed decision-making, enabling institutions to tailor educational services to the specific needs of students and educators. These capabilities are particularly relevant in addressing the persistent challenges faced by Nigeria’s tertiary education system.

Nigeria's tertiary education system, comprising universities, polytechnics, and colleges of education, faces significant challenges. Some of these challenges include inadequate funding, outdated curricula, and a lack of skilled personnel (Christianah & Olufunmilola, 2023). Increasingly, attention is being directed toward the promising capabilities of AI-driven edupreneurship as a viable solution to these pressing issues (Olatunde-Aiyedun et al., 2024). The Nigerian government and various stakeholders have begun to explore the integration of AI technologies into educational frameworks as a means to enhance the quality of the educational system (Bali, 2024). Such initiatives could play a vital role in overcoming systemic challenges and promoting a more dynamic and resilient educational system. Exploring the full potential of AI

technologies in edupreneurship reveals numerous benefits that could revolutionize Nigerian tertiary institutions.

The potential transformation of AI technologies in edupreneurship in Nigerian tertiary institutions is enormous. AI can streamline administrative processes, reduce operational costs, and improve resource allocation, by allowing educational institutions to focus more on their fundamental activities of teaching and research (Franco D'Souza et al., 2024). Additionally, AI-driven analytics support in providing a good understanding of student performance and learning patterns, enabling educators to develop more effective pedagogical strategies and interventions. These transformative impacts highlight the need for a strategic approach to reimagining edupreneurship with AI technologies.

Reimagining edupreneurship with AI technologies offers a promising pathway to modern educational excellence in Nigerian tertiary institutions. By harnessing the power of AI, Nigerian higher education can overcome its current challenges and achieve significant improvements in access, quality, and relevance. This transformation requires a concerted effort from all stakeholders to develop and implement innovative solutions that are both effective and sustainable. As such, this research aims to look at the various pathways through which AI can be integrated into edupreneurship in Nigerian tertiary institutions, providing a roadmap for future developments in this critical area.

Statement of the Problem

Higher education in Nigeria is affected by significant challenges that hinder its ability to provide quality education and compete globally. One of the most pressing issues is inadequate funding. Nigerian tertiary institutions often struggle with limited financial resources, which restricts their ability to invest in critical infrastructure, research, and educator development (Adeyeye & Oladokun, 2023). This chronic underfunding leads to overcrowded classrooms, insufficient learning materials, and poorly maintained facilities, creating an environment that is not conducive to effective teaching and learning. Consequently, the potential for educational excellence remains largely untapped, stifling innovation and growth within the sector.

In addition to financial constraints, outdated curricula significantly exacerbate the challenges facing Nigerian higher education. Many tertiary institutions continue to rely on curricula that fail to align with the evolving demands of the 21st-century knowledge economy

(Otache et al., 2021). These curricula often emphasize rote learning and theoretical knowledge over critical thinking, creativity, and practical application, leaving students ill-equipped to tackle real-world problems. The absence of contemporary topics such as digital literacy, emerging technologies, and entrepreneurial skills creates a significant gap between what is taught and the competencies required by employers. Consequently, graduates struggle to secure meaningful employment or contribute effectively to economic growth. Addressing these issues requires a holistic curriculum overhaul that prioritizes relevance, adaptability, and alignment with global industry standards to prepare students for the challenges of the modern workforce.

Compounding these issues is the scarcity of skilled personnel within Nigerian tertiary institutions. There is a significant shortage of qualified educators, particularly in specialized and technical fields, which hampers the ability of institutions to provide high-quality education (Mordi et al., 2023). This shortage is often exacerbated by brain drain, where talented academics and professionals seek better opportunities abroad due to the unfavorable working conditions and limited career prospects in Nigeria. The lack of skilled personnel not only affects the quality of education but also limits the capacity for research and development, which are critical components of a robust higher education system. This research looked into how AI-driven edupreneurship can support the development and retention of skilled educators by providing tools for professional development, and optimizing administrative tasks, thereby enhancing institutional capabilities and creating a more conducive teaching and learning environment.

Conceptual Clarifications

To aid comprehension, it is necessary to provide a brief operational definition of the keywords in this study.

Artificial Intelligence (AI) is a multidimensional concept that encompasses various definitions and interpretations across different disciplines. According to Arrieta et al., (2020), Artificial intelligence (AI) refers to the simulation of human intelligence processes by machines, typically computer systems such as ChatGPT, Scite AI, Gemini AI, Copilot AI, DeepMind, IBM Watson, Amazon Alexa, Google Assistant, Facebook News Feed, Microsoft Cortana, Netflix Recommendation System, Tesla Autopilot and so on. Feng et al., (2021) also defined it as the ability of a system to interpret external data, learn from it, and accomplish specific goals through adaptive processes (Feng et al., 2021). This definition emphasizes the capacity of AI systems to

understand and learn from data to achieve predefined objectives. Minbaleev (2022) viewed AI as a complex information object that involves a set of technologies implemented in intelligent information systems or AI systems. This perspective highlights AI as a technological construct embedded within systems designed to perform tasks beyond the capabilities of traditional programming.

Artificial Intelligence (AI) in Education encompasses a multidimensional field, as articulated by various scholars. Chen et al., (2020) characterize it as a study dedicated to constructing intelligent computer systems capable of teaching and learning, emphasizing the integration of computational techniques to enhance educational processes. Munir et al., (2022) define AI in Education as the application of machine learning algorithms and other AI techniques to analyze educational data, facilitate learning processes, and personalize educational experiences. Latham et al., (2012) elaborate on the creation of adaptive learning environments through the utilization of intelligent tutoring systems, educational data mining, and natural language processing, emphasizing the individualization of instruction and assessment. Luan et al., (2020) conceptualize AI in Education at the intersection of artificial intelligence, educational technology, and learning sciences, aimed at developing intelligent systems to support teaching, learning, and assessment. These definitions collectively underscore the diverse facets of AI in Education, ranging from its role in enhancing teaching and learning processes to its emphasis on data analysis, personalization, and the creation of adaptive learning environments tailored to individual learners.

Edupreneurship is an emerging field at the intersection of education and entrepreneurship, has been conceptualized by various scholars in diverse ways, reflecting its nature. The concept highlights the innovative and proactive approach to solving educational challenges, aiming to create more effective, efficient, and inclusive educational systems. Hartono (2021) conceptualizes edupreneurship by emphasizing its role in driving educational reform and transformation. He argues that edupreneurship is not merely about creating new ventures within education but also about changing the mindset and culture of educational institutions to be more innovative, flexible, and responsive to the needs of students and society.

Similarly, Linton and Klinton (2019) describe edupreneurship as a dynamic process that integrates entrepreneurial thinking into the educational sphere, highlighting the importance of entrepreneurial education in developing skills such as creativity, risk-taking, and problem-solving

among educators and students. This approach aims to prepare individuals to navigate and succeed in an increasingly complex and uncertain world. Adding to this perspective, Jin and Forrest (2019) assert that edupreneurship fosters creativity and innovation within educational systems. They posit that edupreneurs are change agents who challenge the traditional educational system by introducing new approaches to teaching and learning, using technology and unconventional methods to enhance student engagement and learning outcomes.

The importance of edupreneurship lies in its potential to transform traditional educational models. By fostering a spirit of innovation, edupreneurship can address critical issues such as educational access, quality, and relevance. For instance, edupreneurial initiatives can introduce scalable solutions that provide quality education to underserved populations, using technology to overcome geographical and financial barriers (Adekugbe & Ibeh, 2024). Furthermore, edupreneurship encourages a more learner-centered approach, emphasizing personalized learning experiences that cater to individual needs and learning styles, thereby enhancing educational outcomes.

Globally, edupreneurship has seen a surge in interest and activity, driven by the increasing recognition of the limitations of traditional educational models in meeting contemporary demands. In developed countries, edupreneurial ventures such as Khan Academy, Coursera, and Udacity have transformed access to education, offering free or low-cost courses to millions worldwide (Vieira et al., 2023). These platforms utilize advanced technologies, including AI and machine learning, to personalize learning experiences and provide real-time feedback, exemplifying the impact of edupreneurial innovation on educational practices.

In Nigeria, the concept of edupreneurship is gaining reception as a viable solution to the many challenges facing the educational sector. The Nigerian educational system, characterized by inadequate funding, outdated curricula, and poor infrastructure, presents a fertile ground for edupreneurial interventions (Oloyede et al., 2017). Nigerian edupreneurs are increasingly using technology to create innovative educational solutions. For instance, platforms like uLesson and Tuteria for secondary students preparing for tertiary education provide digital learning resources and connect learners with qualified tutors, addressing gaps in traditional education delivery (Eze et al., 2018). These initiatives demonstrate the potential of edupreneurship to enhance educational access and quality in Nigeria.

Current trends in edupreneurship globally and in Nigeria reflect a shift towards the integration of advanced technologies in education. AI, in particular, is playing a crucial role in driving edupreneurial innovation. AI-powered tools and platforms enable personalized learning, predictive analytics, and automated administrative processes, thereby improving efficiency and effectiveness in educational delivery (Syed & Albalawi, 2024). In Nigeria, there is a growing interest in using AI technologies to address specific educational challenges, such as teacher shortages and inadequate learning resources, highlighting the relevance of AI-driven edupreneurship in the Nigerian education system.

The integration of edupreneurship within the educational framework holds significant promise for transforming education in Nigeria. Nigerian edupreneurs can address longstanding challenges and create a more dynamic and resilient educational system by adopting innovative, technology-driven approaches. This research explores the theoretical foundations of edupreneurship and AI integration, providing insights into how these concepts can be harnessed to achieve educational excellence in Nigerian tertiary institutions. Understanding the transformative impacts of AI technologies is vital to realizing the potential of edupreneurship in addressing these challenges.

Transformative Impacts of AI Technologies in Edupreneurship

AI technologies offer transformative potential in edupreneurship by enabling innovative solutions and methodologies that enhance educational experiences and outcomes. One significant AI application is personalized learning, which adapts instructional content to meet the individual needs of students. Tools like DreamBox and Knewton use machine learning algorithms to analyze student performance data and deliver customized lessons that address specific learning gaps and preferences (Kavita & Chhillar, 2022). This approach not only improves student engagement but also optimizes learning efficiency and effectiveness. Beyond personalized learning, Intelligent Tutoring Systems (ITS) further illustrate the potential of AI in creating responsive educational environments.

Intelligent Tutoring Systems (ITS) represent another crucial AI technology in edupreneurship. These systems provide personalized tutoring experiences by continuously adapting to students' learning progress and offering tailored feedback. Research indicates that ITS, such as Carnegie Learning's Cognitive Tutor, significantly enhances learning outcomes by

providing immediate, personalized support and addressing individual student misconceptions (Ji & Yuan, 2022). ITS thus plays a vital role in creating more responsive and effective educational environments. Additionally, Natural Language Processing (NLP) technologies extend AI's role in edupreneurship, enabling innovative tools for educators and learners alike.

Natural Language Processing (NLP) applications are also pivotal in edupreneurship. NLP enables the development of automated grading systems, virtual assistants, and interactive learning tools that facilitate efficient and personalized educational experiences. For instance, automated essay scoring systems like those developed by Turnitin use NLP to provide consistent and immediate feedback on written assignments, thereby improving the quality of education and reducing the administrative burden on educators (Ke & Ng, 2019). Additionally, AI-powered chatbots offer real-time assistance, enhancing student engagement and support. While NLP advances personalization and efficiency, Educational Data Mining (EDM) and predictive analytics provide a foundation for strategic, data-driven decision-making in education.

Educational Data Mining (EDM) and predictive analytics are essential AI technologies for edupreneurs. These technologies analyze vast amounts of educational data to identify patterns, predict student outcomes, and inform strategic decision-making. Tools like Blackboard Predict and Moodle's Learning Analytics help institutions monitor student performance, anticipate academic risks, and implement timely interventions (Gamede et al., 2022). By leveraging EDM and predictive analytics, edupreneurs can develop data-driven strategies that enhance educational effectiveness and student success. Complementing these tools, interactive simulations and adaptive learning platforms also reshape education by providing more engaging and personalized learning experiences.

AI-driven interactive simulations and adaptive learning platforms can significantly elevate the quality of education by personalizing the learning experience to meet individual student needs and learning paces (Eden et al., 2024). Platforms like **Labster**, which offers virtual science lab simulations, enable students to conduct experiments in a risk-free, interactive environment, thereby enhancing their understanding of complex scientific concepts. Similarly, **Smart Sparrow**, an adaptive learning platform, allows educators to create customized learning pathways that adjust to students' progress and mastery levels, ensuring a tailored educational experience. These technologies directly address the challenge of outdated curricula and traditional teaching methods,

making education more relevant and effective. This shift not only enhances student engagement and learning outcomes but also aligns with the study's objective of modernizing Nigerian tertiary education through innovative AI applications. Building on this, AI-powered virtual assistants further complement these advancements by automating administrative tasks and providing continuous support, ensuring students and educators benefit from streamlined and efficient educational processes.

AI-powered virtual assistants can manage numerous tasks, including answering students' frequently asked questions, scheduling office hours, and sending reminders about deadlines and assignments. Operating 24/7, these virtual assistants provide timely responses and support, even outside of regular office hours, ensuring continuous student engagement and assistance (Gonzalez et al., 2022). For example, **Jill Watson**, an AI chatbot used at Georgia Tech to answer students' course-related questions, and **IBM Watson Assistant** provides personalized, AI-driven support for students at various educational institutions (Talwar, 2023). These tools reduce the burden of routine inquiries on lecturers, allowing them to focus on high-quality instruction, and promoting a more interactive and effective learning environment. However, realizing these AI-driven advancements in Nigeria requires addressing tertiary institutions' current challenges. However, realizing these AI-driven advancements in Nigeria requires addressing tertiary institutions' current challenges.

Current State of Nigerian Tertiary Institutions

Nigerian tertiary institutions are currently grappling with different challenges that hinder their ability to deliver quality education. One of the most pressing issues is inadequate funding, which affects infrastructure development, staff remuneration, and the acquisition of teaching materials (Yakubu & Dasuki, 2018). The reliance on government allocations, which are often insufficient, leaves many institutions struggling to maintain basic operational standards. This financial strain aggravates other systemic problems, creating a cycle of underperformance and limited educational outcomes.

Another critical issue is the outdated curricula that fail to align with contemporary global standards and industry demands. Many Nigerian universities continue to employ traditional teaching methods that do not adequately prepare students for the modern workforce (Abdullahi & Yusoff, 2019). The lack of curriculum reform and innovation stifles students' ability to develop

critical thinking, creativity, and practical skills essential for thriving in a rapidly changing world. This disconnection between academic training and real-world application contributes to high unemployment rates among graduates.

Poor infrastructure is another significant challenge facing Nigerian tertiary institutions. Many universities suffer from inadequate and dilapidated facilities, including classrooms, laboratories, and libraries (Olojuolawe & Adeoluwa, 2022). The absence of modern technology and resources impedes effective teaching and learning processes. For instance, limited access to computers and the internet hampers students' ability to engage in research and access digital learning materials. The infrastructural deficiencies also extend to student accommodations and other essential services, affecting overall student welfare and academic performance.

Additionally, the shortage of skilled personnel is a major concern in Nigerian higher education. There is a notable gap in the recruitment and retention of qualified academic staff due to poor remuneration and working conditions (Salau et al., 2020). This shortage affects the student-to-teacher ratio, leading to overcrowded classrooms and insufficient individual attention. Moreover, the lack of continuous professional development opportunities for lecturers limits their ability to adopt innovative teaching practices and integrate modern technologies into their pedagogy (Itasanmi et al., 2022). These challenges collectively contribute to the declining quality of education in Nigerian tertiary institutions.

Furthermore, the ethical use of AI technologies presents an emerging concern. Given AI's transformative potential in education, its implementation must be guided by ethical considerations to prevent biases, ensure data privacy, and promote equitable access (Chisom et al., 2023). Nigerian institutions must develop robust policies and frameworks to address these ethical challenges, ensuring that AI tools are used responsibly and transparently. This will safeguard the interests of students and educators, promoting trust in the integration of advanced technologies into the educational system.

Integration Pathways for AI in Nigerian Tertiary Institutions

Integrating AI into Nigerian tertiary education requires a comprehensive and holistic approach to addressing the existing challenges and improve educational outcomes. Some of the pathways that could be followed to bring about improved educational outcomes are:

1. Development of robust infrastructure: Institutions need substantial investments in technology infrastructure, including high-speed internet, modern computer laboratories, and digital libraries (Ebekozien et al., 2022). These foundational elements are crucial for implementing AI-driven educational tools and ensuring that both students and faculty have access to the necessary resources for effective learning and teaching.
2. Curriculum reform: Updating and aligning curricula with global standards and workforce demands is vital to make education more relevant and practical (Adeoye et al., 2023). This involves integrating AI literacy and computational thinking into the curriculum to equip students with the skills needed in a technology-driven world. Incorporating AI concepts, programming skills, and data analytics, makes students proficient in essential 21st-century skills. Additionally, this reform should include training educators to use AI tools effectively in their teaching activities, enabling them to create interactive, personalized learning experiences. Such comprehensive curriculum reform fosters a more engaging and dynamic learning environment, better preparing both students and teachers for future technological advancements.
3. Professional development and capacity building for academic staff: This is vital for the successful integration of AI in education. This includes teaching educators the foundational AI concepts and ethics (Mah & Groß, 2024). Partnerships with international educational organizations and tech companies can facilitate knowledge transfer and provide access to cutting-edge AI tools and resources, enhancing the overall quality of education. With this comprehensive approach, both students and educators are better prepared for future technological advancements, ensuring a more effective and dynamic learning environment.
4. Establishing collaborative research and development centers focused on AI in education: This can drive innovation and adaptation of AI technologies to local contexts (Bali, 2024). These centers can serve as hubs for developing and testing new AI applications tailored to the specific needs of Nigerian students and institutions. Engaging students in these research activities can also create a culture of innovation and entrepreneurship, encouraging them to develop homegrown solutions to educational challenges.
5. Promoting entrepreneurship is the Policy and governance frameworks that must be planned to support AI integration. Government policies should be designed to promote the adoption

of AI in education through funding, regulatory support, and strategic planning (Avurakoghene & Oredein, 2023). Institutions should establish clear governance structures to oversee AI implementation, addressing ethical considerations and data privacy. By creating an enabling environment, policymakers can help accelerate the integration of AI technologies in Nigerian tertiary institutions, ultimately leading to a more modern and effective educational system.

Conclusion

This research underscores the transformative potential of AI technologies in modernizing instructional practices and advancing edupreneurship in Nigerian tertiary institutions. Institutions can significantly enhance educational delivery and align with global standards by utilizing AI-driven solutions such as personalized learning platforms and intelligent tutoring systems. These technologies enable more engaging, adaptive, and efficient teaching and learning experiences, addressing critical gaps in traditional methods. A roadmap for successful integration involves developing robust infrastructure, reforming curricula to incorporate AI literacy, providing professional development for educators, and promoting collaborative research initiatives. Additionally, supportive government policies and governance frameworks are critical for ensuring ethical and sustainable AI implementation. Policies should ensure ethical use, data privacy, and equitable access to AI technologies, promoting responsible implementation. Adopting these targeted measures will help Nigerian tertiary institutions overcome systemic challenges, enhance educational outcomes, and build a competitive and future-ready academic ecosystem.

References

Abdullahi, I., & Wan Yusoff, W. Z. (2019). Influence of facilities performance on student's satisfaction in northern Nigerian universities: results from interim study. *Facilities*, *37*(3/4), 168-181.

Adekugbe, A. P., & Ibeh, C. V. (2024). Innovating service delivery for underserved communities: leveraging data analytics and program management in the US context. *International Journal of Applied Research in Social Sciences*, *6*(4), 472-487.

Adeoye, M. A., Akinnubi, O. P., & Yahaya, A. K. (2023). Unlocking the Potential of Education in Nigeria's Industry 4.0 Era: Overcoming Challenges of Digital Transformation. *Indonesian Journal of Educational Research and Review*, *6*(3).

Adeyeye, S. V., & Oladokun, T. A. (2023). Application of emerging technologies for research support in Nigerian academic libraries: Trends, problems and prospects. *IASSIST Quarterly*, *47*(3-4).

Arrieta, A. B., Díaz-Rodríguez, N., Del Ser, J., Bennetot, A., Tabik, S., Barbado, A., & Herrera, F. (2020). Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI. *Information fusion*, *58*, 82-115.

Avurakoghene, O. P., & Oredein, A. (2023). Educational leadership and artificial intelligence for sustainable development. *Shodh Sari-An International Multidisciplinary Journal*, *2*(3).

Ayanwale, M. A., Adelana, O. P., & Odufuwa, T. T. (2024). Exploring STEAM teachers' trust in AI-based educational technologies: A structural equation modeling approach. *Discover Education*, *3*(1), 1-22.

Bali, B. (2024). Analysis of Emerging Trends in Artificial Intelligence in Education in Nigeria. doi:10.21203/rs.3.rs-3819828/v1

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: a review. *IEEE Access*, 8, 75264-75278. https://doi.org/10.1109/access.2020.2988510

Chisom, O. N., Unachukwu, C. C., & Osawaru, B. (2023). Review of AI in education: transforming learning environments in Africa. *International Journal of Applied Research in Social Sciences*, *5*(10), 637-654.

Christianah, A., & Olufunmilola, O. (2023). Assessment of Tertiary Education Trust Fund (TETFund) Interventions and Academic Staff Job Performance in Public Universities in Southwest, Nigeria. *American Journal of Education and Practice*, *7*(2), 90-103.

Ebekozien, A., Samsurijan, M. S., Aigbavboa, C., Firdaus, R. B. R., Azazi, N. A. N., & Amadi, G. C. (2022). Infrastructure development in higher institutions: the role of private organisations via unexplored expanded corporate social responsibility (ECSR). *Property Management*, *41*(1), 149-168.

Eden, C. A., Chisom, O. N., & Adeniyi, I. S. (2024). Integrating AI in education: Opportunities, challenges, and ethical considerations. *Magna Scientia Advanced Research and Reviews*, *10*(2), 006-013.

Eze, S. C., Chinedu-Eze, V. C., & Bello, A. O. (2018). The utilisation of e-learning facilities in the educational delivery system of Nigeria: a study of M-University. *International Journal of Educational Technology in Higher Education*, *15*(1), 1-20.

Feng, Y., Qiu, L., & Sun, B. (2021). A measurement framework of crowd intelligence. *International Journal of Crowd Science*, 5(1), 81-91. https://doi.org/10.1108/ijcs-09-2020-0015

Franco D'Souza, R., Mathew, M., Mishra, V., & Surapaneni, K. M. (2024). Twelve tips for addressing ethical concerns in the implementation of artificial intelligence in medical education. *Medical Education Online*, *29*(1), 2330250.

Gamede, B. T., Ajani, O. A., & Afolabi, O. S. (2022). Exploring the adoption and usage of learning management system as alternative for curriculum delivery in South African higher education institutions during Covid-19 lockdown. *International Journal of Higher Education*, *11*(1), 71-84.

Gonzalez, L. A., Neyem, A., Contreras-McKay, I., & Molina, D. (2022). Improving learning experiences in software engineering capstone courses using artificial intelligence virtual assistants. *Computer Applications in Engineering Education*, *30*(5), 1370-1389.

Hartono (2021). Changing University Students' Mindset: From Job Seekers to Job Creators. Technium Social Sciences Journal, *18*, 433. doi:10.47577/tssj.v18i1.3026

Itasanmi, S. A., Oni, M. T., Ekpenyong, V. O., Ajani, O. A., & Omorinkoba, O. G. (2022). Academic staff's motivation for online teaching in Nigerian universities: Empirical evidence from the university of Ibadan. *International Journal of Learning, Teaching and Educational Research*, *21*(7), 345-365.

Ji, S., & Yuan, T. (2022, March). Conversational intelligent tutoring systems for online learning: What do students and tutors say? In *2022 IEEE Global Engineering Education Conference (EDUCON)* (pp. 292-298). IEEE.

Jin, L., & Forrest, K. (2019). Fostering creativity via technoself enhanced learning with emerging technologies. In *EDULEARN19 Proceedings*, 3247-3254. IATED.

Kavita, K., & Chhillar, R. S. (2022). Human face recognition and age estimation with machine learning: A critical review and future perspective. *International journal of electrical and computer engineering systems*, *13*(10), 945-952.

Ke, Z., & Ng, V. (2019). Automated Essay Scoring: A Survey of the State of the Art. In *IJCAI*, 19, 6300-6308. doi:10.24963/ijcai.2019/879

Kim, J. Y., Choi, D. S., Sung, C. S., & Park, J. Y. (2018). The role of problem-solving ability on innovative behavior and opportunity recognition in university students. *Journal of Open Innovation: Technology, Market, and Complexity*, *4*(1), 4.

Latham, A., Crockett, K., McLean, D., & Edmonds, B. (2012). A conversational intelligent tutoring system to automatically predict learning styles. Computers &Amp; Education, 59(1), 95-109. https://doi.org/10.1016/j.compedu.2011.11.001

Linton, G., & Klinton, M. (2019). University entrepreneurship education: a design thinking approach to learning. *Journal of innovation and Entrepreneurship*, *8*(1), 1-11.

Luan, H., Géczy, P., Lai, H., Gobert, J. D., Yang, S. J. H., Ogata, H., & Tsai, C. C. (2020). Challenges and future directions of big data and artificial intelligence in education. *Frontiers in Psychology*, 11. https://doi.org/10.3389/fpsyg.2020.580820

Mah, D. K., & Groß, N. (2024). Artificial intelligence in higher education: exploring faculty use, self-efficacy, distinct profiles, and professional development needs. *International Journal of Educational Technology in Higher Education*, *21*(1), 58. https://doi.org/10.1186/s41239-024-00490-1.

Minbaleev, A. (2022). The concept of artificial intelligence in law. bulletin of udmurt university series economics and law, 32(6), 1094-1099. https://doi.org/10.35634/2412-9593-2022-32-6-1094-1099

Monteiro, S., Isusi-Fagoaga, R., Almeida, L., & García-Aracil, A. (2021). Contribution of higher education institutions to social innovation: Practices in two Southern European universities. *Sustainability*, *13*(7), 3594.

Mordi, C., Ajonbadi, H. A., Adekoya, O. D., & Oruh, E. S. (2023). An exploration of the practices of locational flexibility in developing economies: insights from the Nigerian higher education sector. *Employee Relations: The International Journal*, *45*(5), 1180-1198.

Munir, H., Vogel, B., & Jacobsson, A. (2022). Artificial intelligence and machine learning approaches in digital education: a systematic revision. Information, 13(4), 203. https://doi.org/10.3390/info13040203

Olatunde-Aiyedun, T. G., Ojelade, I. A., & Aregbesola, B. G. (2024). AI Training in Science Education for Educational Entrepreneurship. *Journal of Innovation in Educational and Social Research*, *2*(8), 1-12.

Olojuolawe, S., & Adeoluwa, O. V. (2022). Equipment and Facilities Gap in Vocational Technical Education of Higher Institution: Implication for Graduates Employability in Nigeria. *Sains Humanika*, *14*(2), 13-21.

Oloyede, A. A., Ajimotokan, H. A., & Faruk, N. (2017). Embracing the future of engineering education in Nigeria: teaching and learning challenges. *Nigerian Journal of Technology*, *36*(4), 991-1001.

Otache, I., Umar, K., Audu, Y., & Onalo, U. (2021). The effects of entrepreneurship education on students' entrepreneurial intentions: A longitudinal approach. *Education+ Training*, *63*(7/8), 967-991.

Salau, O., Worlu, R., Osibanjo, A., Adeniji, A., Falola, H., Olokundun, M., & Ogueyungbo, O. (2020). The impact of workplace environments on retention outcomes of public Universities in Southern Nigeria. *Sage Open*, *10*(2), 2158244020930767.

Syed, S., & Albalawi, E. M. (2024). Harnessing Big Data and Data Science for Enhanced Efficiency in Higher Education: An Exhaustive Review and Assessment.

Talwar, P. (2023). *The Strategic Use of Virtual Teacher Assistants to Increase Faculty Engagement and Job Satisfaction*. Trident University International.

Vieira, L. D. S., Meirelles, D. A., & Emmendoerfer, M. (2023). Organizational Support for Entrepreneurial Orientation: The Perception of Professionals from Early Childhood Education Centers in Brazil. *Journal of New Approaches in Educational Research*, *12*(1), 100-119.

Walter, Y. (2024). Embracing the future of Artificial Intelligence in the classroom: the relevance of AI literacy, prompt engineering, and critical thinking in modern education. *International Journal of Educational Technology in Higher Education*, *21*(1), 15.

Yakubu, N., & Dasuki, S. (2018). Assessing eLearning systems success in Nigeria: An application of the DeLone and McLean information systems success model. *Journal of Information Technology Education: Research*, *17*, 183-203.