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Closing the Gap: Improving Teacher Recruitment and Qualification for Ai Driven Education in Nigerian Universities

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Abstract

This work explores challenges in teacher recruitment and qualification within Nigerian universities, emphasizing the transformative role of Artificial Intelligence (AI). Looking at the shrinking teacher education pipeline, high turnover rates, increased demand in providing educator support, introduction of innovative recruitment and qualification strategies, the discussion underscores AI's potential in automating tasks. AI's ability to optimize educators' time and offer personalized learning experiences is examined, providing solutions to teacher shortages and enhancing teacher quality. Key strategies for effective AI implementation are identified, focusing on data quality, AI literacy for educators, and collaborative partnerships. Suggestions made include promoting unbiased data training, facilitating AI professional development, embedding AI literacy in teacher education, fostering collaborations, and establishing incentives. These strategies offer a roadmap for Nigerian universities to leverage AI, addressing immediate challenges and building a resilient educational system for the 21st century.

Keywords: Teacher Recruitment, Teacher Qualification, Artificial Intelligence (AI).

Introduction

The transformations and changes that are significantly impacting the field of education, has giving rise to a multitude of emerging trends. As a result of the above, Artificial Intelligence (AI) gradually becomes a transformative force, that will boost effective teaching and learning in Nigerian universities (Philips, 2023). As we explore the intricacies of the 21st century, the role of AI in education is becoming essential, providing unique opportunities for improved educational results. According to Veltris (2023), Artificial Intelligence has arisen as an influential tool that has the potential to change the traditional education systems. Its applications in adaptive learning, personalized instruction, and data-driven decision-making promise a more effective and inclusive educational experience. AI technologies can cater to diverse learning needs, offering tailor-made approaches that transcend traditional pedagogical limitations. The transformative impact of AI extends beyond the conventional boundaries of education, seeping into the realms of student engagement, assessment, and overall educational efficacy.

On the other hand, the integration of AI in education comes with its own constraints and opportunities, particularly in the context of Nigerian universities. Veltris (2023) highlights that sustainable development in AI-driven education requires a nuanced understanding of the challenges impeding the current state of teacher recruitment and qualification. The existing landscape is characterized by a shrinking teacher education pipeline, elevated turnover rates, and an escalating demand for qualified educators. Ibrahim (2023) also notes that one of the primary challenges of integrating AI tools in Nigerian education is the gap in access to technology tools and the internet across the nations. Bridging this digital divide is crucial to ensure equitable access to AI-powered education. These challenges necessitate strategic interventions, and AI stands as a potential catalyst for transformative change.

This work delves into the current state of teacher recruitment and qualification in Nigerian universities, exploring the intricate web of challenges that hinder progress. It also sheds light on the opportunities that lie within the realm of AI-driven education, providing a roadmap for leveraging technological advancements to address the critical issues at hand.

Present situation of Teacher Recruitment and Qualification in Nigerian Universities

The landscape of teacher recruitment and qualification in Nigerian universities is marred by a confluence of challenges that pose significant threats to the quality and sustainability of the education system. A critical concern is the gradual contraction of the teacher education pipeline, where a diminishing number of individuals pursue teaching qualifications. Idoko (2023) notes that this has caused massive reduction in the number of qualified and experienced teachers, which poses a significant constraint to the quality of education provided in the country. Disadvantaged schools and regions suffer disproportionately due to the scarcity of teachers, and students. These schools are deprived of equal access to quality education. This trend is influenced by factors such as the perceived lack of financial incentives in teaching compared to alternative professions, contributing to a shortage of qualified educators to meet the escalating demand for quality education.

According to Friday (2023), Nigeria also faces the challenge of teacher quality deficiency, with many teachers lacking the necessary qualifications and training. In addition, there is an insufficiency of teachers, especially in rural areas, where many schools have few or low qualified teachers. Furthermore, Friday (2023) suggests that one of the most important challenges facing education in Nigeria is inadequate funding. Despite government promises to allocate 26% of its annual budget to education, this has not been achieved, with the sector receiving less than 10% of the budget in recent years. This has resulted in a lack of resources, inadequate facilities, and low teacher salaries.

Concurrently, High turnover rates among educators in Nigerian universities compound the challenges of recruitment and qualification. The persistent departure of experienced faculty members, often attributed to inadequate remuneration and limited opportunities for professional growth, disrupts the continuity of academic programme and hinders the development of a stable, experienced teaching workforce. According to recent studies, the attrition rate for teachers in Nigeria is alarmingly high, with approximately 30% of teachers leaving the profession within the first five years of their career. (Idoko, 2023).

The high rate of teacher attrition in Nigeria cannot be understated, as it exacerbates educational inequality in the country. Disadvantaged schools and regions suffer disproportionately due to the scarcity of teachers, often lacking the resources to attract and retain qualified educators. As

a result, students from these schools are deprived of equal access to quality education, and the achievement gap between students from different backgrounds widens as a consequence of the teacher shortage crisis (Idoko, 2023)

The high turnover rates of qualified teachers in rural Nigerian secondary schools have also negatively impacted the educational system in Nigeria. Rural communities have suffered negligence and untold hardship, with the severity of teachers turnover in rural areas being quite high. The lack of effective school leadership, an improved remuneration system, provision of infrastructure, provision of learning and information and communication technology facilities, and the need for public policy to support rural schools are some of the factors responsible for the high rate of turnover of teachers working in rural areas (Abioye, 2021).

The surge in demand for qualified educators in Nigerian universities is driven by factors such as population growth, increased enrollment, and evolving student needs. However, the challenge lies in aligning the supply of qualified teachers with this burgeoning demand. Failure to do so not only compromises the quality of education but perpetuates a cycle of unmet educational needs, hindering the holistic development of the education system (Solomon, 2020).

The Role of AI in Addressing Teacher Shortages and Improving Teacher Quality

In the quest to navigate the persistent challenges of teacher shortages and enhance the overall quality of education in Nigerian universities, Artificial Intelligence (AI) emerges as a potent ally. AI technologies can play a pivotal role in addressing teacher shortages by providing virtual teaching support and automating routine tasks, thereby alleviating the burden on educators and enhancing the overall educational experience (Tariq, 2023). The author further states in his Linkedin article that AI-powered virtual teachers have the potential to bridge the gap in teacher shortages by providing remote and personalized instruction to students, particularly in areas with limited access to qualified educators. The fact still remains that AI-powered virtual teachers have the potential to bridge the gap in teacher shortages by providing remote and personalized instruction to students, particularly in areas with limited access to qualified educators (Engdahl, 2020). This approach can significantly contribute to addressing the

shortage of trained teachers, especially in low-income countries, and help ensure equitable access to education. AI presents a viable solution to the perennial issue of teacher shortages by automating routine and time-consuming tasks. Administrative burdens, grading assignments, and managing vast amounts of data can be streamlined through AI-driven systems, freeing up educators' time to focus on more complex aspects of teaching and student engagement. By streamlining administrative responsibilities, AI-powered education tools can enhance teacher working conditions and support professional development opportunities tailored to the individual needs of each teacher (Bailey, 2023).

Engdahl (2020) in her article posits that AI technologies can also help mitigate the overwhelming workload faced by teachers, contributing to the retention of experienced educators. By leveraging AI-powered platforms, educators can better manage classrooms, optimize teaching strategies, and provide personalized learning pathways for students, ultimately improving the quality of education and addressing the challenges posed by teacher shortages. According to Shchetyna (2023), AI's role extends beyond task automation to providing invaluable support to educators. Intelligent tutoring systems can offer real-time feedback and assistance to students, reducing the burden on teachers while ensuring that students receive immediate guidance. In another online article, Sajid (2023) reiterates that Virtual teaching assistants equipped with natural language processing capabilities can facilitate communication between teachers and students, enhancing the accessibility of educational resources and support. These AI-driven tools act as force multipliers, enabling educators to reach a broader audience effectively. Furthermore, Shchetyna avers that virtual teaching assistants equipped with natural language processing capabilities can bridge communication gaps between educators and students. These AI-powered assistants can facilitate interactive learning experiences, provide instant clarification on academic queries, and offer additional support to students, especially in scenarios where direct teacher-student interaction may be limited. By enhancing the accessibility of educational resources and support, AI-driven virtual teaching assistants play a crucial role in fostering a more inclusive and responsive learning environment (Sajid, 2023).

According to Ashley (2023), the integration of AI-driven tools in education represents a paradigm shift in the way educators engage with students and deliver instruction. By utilizing the capabilities of AI, educators can extend their reach, provide personalized support, and optimize the learning experience for a diverse student population. These AI-driven solutions not only alleviate the burden on teachers but also enhance the overall quality and accessibility of education, thereby contributing to the holistic development of the education system. Furthermore, AI-driven analytics can help assess student performance and identify areas that require targeted intervention. By providing data-driven insights, educators can tailor their teaching strategies to address specific learning needs, ultimately contributing to improved student outcomes (Imeli, Akeem, Olaitan, & Onyekwelu, 2023). This personalized approach to education not only elevates the quality of teaching but also enhances the overall educational experience for students in Nigerian universities

Strategies for Implementing AI-Driven Teacher Recruitment and Qualification in Nigerian Universities

The successful integration of Artificial Intelligence (AI) in addressing teacher shortages, recruitment and enhancing teacher quality within Nigerian universities requires a strategic and well-thought-out approach. In order to effectively implement AI-driven teacher recruitment and qualification in Nigerian universities, it is important to consider the following strategies:

Universities should develop a clear strategy for implementing AI-driven teacher recruitment and qualification. This strategy should include a roadmap for implementation, as well as a plan for evaluating the effectiveness of the program (Chen, Chen, & Lin, 2020). AI systems rely totally on the data they are trained on, and any biases within the data can lead to distorted results that could further entrench current inequalities in recruitment. Therefore, a commitment to data integrity is crucial to avoid inadvertently de-prioritizing candidates who could bring diversity and unique talents to the teaching workforce1. According to (Ibrahim, 2023), implementing rigorous data validation processes and continuous monitoring mechanisms can help mitigate biases. Imeli, et al. (2023) also posits that Institutions should collaborate with data scientists and domain experts to ensure that AI algorithms are trained on diverse and representative datasets, fostering a fair and inclusive recruitment process. This strategy is fundamental in

building a teaching workforce that reflects the diversity and richness of the educational landscape in Nigeria.

Shchetyna (2023) posits that the use of AI in teacher recruitment and qualification can help address the shortage of teachers by automating certain tasks and providing support to teachers. AI can automate administrative tasks such as grading, lesson planning, and content creation, allowing teachers to focus on more meaningful interactions with students and personalized instruction. By streamlining administrative responsibilities, AI-powered education tools can enhance teacher working conditions and support professional development opportunities tailored to the individual needs of each teacher (Shchetyna, 2023).

Phillips (2023), on a recent online article posits that intelligent tutoring systems powered by AI can provide real-time feedback and assistance to students, reducing the burden on teachers while ensuring that students receive immediate guidance. These systems can analyze individual learning patterns, provide targeted feedback, and offer customized learning pathways, thereby supplementing the efforts of educators and addressing the diverse needs of students. AI can assist in curriculum design, pinpoint areas for improvement, and personalize learning plans, ultimately contributing to addressing the shortage of teachers and enhancing the overall quality of education. By leveraging AI, educators can enhance the quality of instruction and support, ultimately contributing to improved student outcomes and engagement (Edwards & Cheok, 2018).

As AI becomes an integral part of the education ecosystem, it is imperative to equip teachers with the necessary skills to effectively leverage AI tools and technologies. Providing support for professional development in AI-related competencies ensures that educators can navigate and harness the potential of these technologies in their teaching practices. Workshops, training programs, and ongoing learning opportunities can empower teachers to integrate AI-driven tools seamlessly into their classrooms, thereby enhancing the overall quality of education. Moreover, incorporating AI literacy into teacher education programs can prepare the next generation of educators to engage with emerging technologies. By fostering a culture of continuous learning, Nigerian universities can build a teaching workforce that is adept at navigating the evolving landscape of AI-driven education.

Philips (2023) however insists that the implementation of AI-driven teacher recruitment and qualification necessitates collaboration with various stakeholders, including educational institutions, policymakers, and the private sector. Establishing partnerships with other universities and research institutions can facilitate the sharing of best practices, resources, and insights into the effective deployment of AI in education. Ibrahim (2023) also points out that engaging with policymakers is critical to creating an enabling environment for AI adoption in education. Advocacy for supportive policies, funding, and regulatory frameworks can contribute to the sustainable integration of AI-driven solutions. Furthermore, collaboration with the private sector can bring valuable expertise, technological resources, and innovative solutions to the table, fostering a collective effort to address teacher shortages and elevate teacher quality in Nigerian universities (Philips, 2023). The successful implementation of AI-driven teacher recruitment and qualification in Nigerian universities requires a multifaceted approach. By ensuring data quality, supporting teachers in developing AI skills, and fostering collaborative partnerships, institutions can harness.

Suggestions

Drawing from the comprehensive exploration of challenges and strategies discussed earlier, the following suggestions are proposed for enhancing teacher recruitment and qualification in Nigerian universities through the effective integration of Artificial Intelligence (AI):

1. Nigerian Universities should prioritize the implementation of AI systems to automate routine and time-consuming tasks, such as administrative duties and grading. This will alleviate the burden on educators, allowing them to focus on more complex aspects of teaching and student engagement.
2. Institutions must establish protocols to ensure the quality and fairness of data used in AI systems. Rigorous validation processes and ongoing monitoring should be employed to detect and rectify biases in the algorithms. This commitment is essential to building a diverse and inclusive teaching workforce.
3. Produce adequate comprehensive professional development programs to equip educators with the skills necessary to integrate AI tools effectively. Workshops, training

sessions, and AI literacy programs should be designed to empower teachers to navigate and leverage emerging technologies in their teaching practices.

4. Integrate AI literacy into pre-service teacher education programs to prepare future educators for the evolving educational landscape. This ensures that new teachers enter the profession with a foundational understanding of AI technologies and their potential impact on teaching and learning.
5. Improve the act of working together between universities, research institutions, policymakers, and the private sector. These partnerships can facilitate knowledge exchange, resource-sharing, and the development of innovative solutions. Engage with policymakers to advocate for supportive regulations and policies that encourage the adoption of AI in education.
6. Implement mentorship programs to facilitate knowledge transfer and skill development among educators. Experienced teachers can mentor their colleagues in effectively integrating AI tools into their teaching methods, promoting a culture of peer learning and collaboration.
7. Develop incentive structures to encourage educators to embrace AI-driven technologies in their classrooms. Recognize and reward innovative teaching practices that leverage AI to enhance student learning outcomes. This could include grants, awards, or professional recognition for educators leading the way in AI integration.
8. Implement a continuous evaluation process for AI systems to ensure their effectiveness and relevance. Regular updates and improvements should be made based on feedback from educators and students, technological advancements, and changes in educational needs.
9. Establish clear ethical guidelines for the use of AI in education, emphasizing transparency, fairness, and accountability. Regular training on ethical AI practices should be provided to educators and administrators to ensure responsible and equitable use of these technologies.

10. Foster collaboration between educators and professionals in AI, data science, and related fields. Cross-disciplinary teams can work together to develop and implement AI-driven solutions tailored to the specific needs of Nigerian universities.

By embracing these recommendations, Nigerian universities can harness the transformative power of AI to not only address teacher shortages and improve teacher quality but also pave the way for a more adaptive and efficient educational system that meets the evolving needs of students and society.

Conclusion

In the pursuit of enhancing teacher recruitment and qualification within Nigerian universities, the integration of Artificial Intelligence (AI) emerges as a transformative force, offering solutions to longstanding challenges and opportunities for advancement. This exploration has underscored the critical importance of addressing the shrinking teacher education pipeline, high turnover rates, and increased demand, while simultaneously leveraging AI to usher in a new era of educational effectiveness and efficiency. The challenges facing teacher recruitment and qualification are complex, deeply rooted, and require strategic interventions. The shrinking teacher education pipeline poses a threat to the sustainability of the education system, demanding a shift in societal perceptions and the implementation of targeted initiatives to incentivize teaching as a rewarding and esteemed profession. High turnover rates among educators exacerbate these challenges, necessitating comprehensive strategies to improve working conditions, provide professional growth opportunities, and ultimately foster a stable and experienced teaching workforce.

Simultaneously, the increased demand for qualified educators necessitates innovative approaches to align the supply of teachers with the growing needs of Nigerian universities. Against this backdrop, AI emerges as a powerful tool, offering the potential to not only address teacher shortages but also elevate the overall quality of education. Through the automation of routine tasks, AI can alleviate administrative burdens, allowing educators to focus on more complex aspects of teaching and individualized student engagement. Intelligent tutoring systems and virtual teaching assistants provide invaluable support, creating a collaborative environment where technology enhances, rather than replaces, the role of educators.

The effective implementation of AI-driven teacher recruitment and qualification necessitates a strategic approach. Ensuring the quality and fairness of data, fostering AI literacy among educators, and establishing collaborative partnerships are essential components of this transformative journey. These recommendations aim not only to address the immediate challenges faced by Nigerian universities but also to create a sustainable and adaptive educational ecosystem that prepares students for the complexities of the 21st century.

Consequently, the integration of AI in teacher recruitment and qualification signifies a paradigm shift in Nigerian education. By embracing these advancements, universities can not only meet the demands of the present but also lay the foundation for a future where education is dynamic, inclusive, and attuned to the needs of a rapidly evolving society. The journey towards AI-driven education is a collaborative endeavor, calling for the collective efforts of educators, policymakers, and stakeholders to shape a future where every student has access to quality education, and every educator is equipped with the tools to inspire and guide the next generation.

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