BRIDGING THE SKILL GAP: ENHANCING TEACHER TRAINING BY COMPUTER EDUCATION FOR NIGERIAN SCHOOLS IN POST-COVID 19 ERA

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Abstract

This paper examines the critical importance of enhancing teacher training in computer education for Nigerian schools in the post-COVID-19 era. The COVID-19 pandemic has highlighted challenges in incorporating technology effectively into the curriculum and has widened the skill gap among Nigerian teachers. The lack of access to technology such as internet connectivity, essential teaching materials, and inadequate teacher training programs remain key challenge in failing to equip educators with the necessary digital skills and pedagogical strategies to effectively integrate computer education into their curricula. This has hindered students' ability to acquire digital literacy and hampered their overall academic development. Thus, a comprehensive analysis of the impact of COVID-19 on Nigerian schools and the significance of computer education in the modern world is presented. The study highlights several key recommendations to effectively bridge the skill gap in digital education for Nigerian schools in the post-COVID-19 era. First, it emphasizes the need for targeted investment in professional development programs for teachers, focusing on enhancing their digital competencies and pedagogical practices. To address the digital divide, the study advocates for equitable access to technology and the internet, particularly in underserved areas and improving school infrastructure is also crucial. Therefore, it recommends modernizing classrooms and equipping them with the necessary technological resources. Additionally, the development of comprehensive curriculum guidelines that integrate digital literacy and critical thinking skills is vital to ensure that students are well-prepared for the demands of the digital age. The study encourages fostering public-private partnerships to leverage

resources and expertise in educational technology, which can lead to innovative solutions for teaching and learning.

Introduction

The COVID-19 pandemic has had a profound impact on various sectors across the globe including the educational system. In Nigeria, schools were shut down, leaving students with limited options for continued learning. This sudden transition to online education has highlighted the existing challenges in teacher training, particularly failing to equip teachers with the necessary digital skills and pedagogical strategies to effectively integrate computer education into their instructional activities. It is evident that there is a significant skill gap among Nigerian teachers in effectively utilizing technology for teaching and learning. For instance, report by Olofinbiyi & Adeosun (2019) and Aduwa-Ogiegbaen & Iyamu (2019) highlighted that many teachers lack the basic digital skills required for online teaching, which hampers their ability to engage students effectively in a technology-driven learning environment. Additionally, a study conducted by the Nigerian Communications Commission (NCC) (2020), only a small percentage of teachers are proficient in using online platforms for teaching. Furthermore, a survey by the World Bank (2021) indicated that the COVID19 pandemic aggravated existing inequalities in education, revealing that teachers' lack of familiarity with digital tools was a significant barrier to remote learning efforts in Nigeria. These findings collectively demonstrate a pressing need for enhanced training programs focused on digital literacy and technology integration for teachers, particularly in the wake of the educational disruptions caused by the pandemic.

Technology has become an imperative part of our daily lives, and the capacity to navigate and utilize virtual structures is important for fulfillment in diverse fields. However, many Nigerian schools lack the necessary resources and adequately trained teachers to provide quality education through the utilization of computer and other digital platforms. The COVID19 pandemic has underscored the urgency of addressing this issue and bridging the skill gap.

This paper aims to examine the critical importance of enhancing teacher training in computer education for Nigerian schools in the post-COVID-19 era. It discusses the challenges faced by educators in adapting to online learning and the implications for students' education. Furthermore, it analyses the impact of inadequate computer education on the overall development and future prospects of Nigerian students. Additionally, the paper proposes strategies and recommendations for improving teacher training in computer education, thereby bridging the skill gap and ensuring inclusive and effective digital education in Nigeria.

The Impact of Covid-19 on Nigerian Schools

The COVID-19 pandemic has had a significant impact on Nigerian schools, particularly through the shutdown of institutions and the consequent shift to online education. According to World Bank data, schools in Nigeria were closed for

approximately seven months in 2020 due to the pandemic (World Bank, 2020). The prolonged school closures which we all witnessed worsened existing inequities in the Nigerian education system, significantly impacting the most vulnerable populations. Report from UNICEF stated, as many as 40% of children from low-income families lacked access to the necessary technology for online learning, such as computers or stable internet connectivity. This digital divide not only hindered students' ability to engage with educational content but also contributed to increased dropout rates as students became disengaged from formal education.

Additionally, the closure of schools disrupted the provision of essential school meals, which many children relied on for their nutritional needs. Consequently, this period of uncertainty and instability led to a surge in mal-nutrition, child labour, drug abuse, crime, and early marriages, as families sought alternative means of livelihood, further eroding the foundation of the country's future workforce. The disruption in traditional classroom teaching forced schools to adopt alternative modes of instruction, with online education being the most prevalent. These included the utilization of Learning Management Systems (LMS) - Google classroom, Video Conferencing tools, and Social Media Platforms. Moreover, the shift to remote learning highlighted significant gaps in teacher preparedness and the overall quality of education in Nigeria. Many teachers found themselves ill-equipped to transition to online teaching, lacking both the digital skills and the pedagogical training necessary to effectively engage students in a virtual environment. Though some institutions initiated training programmes to address this shortfall, the rapid pace of change often outstripped the capacity for effective adaptation. As a result, the quality of education suffered, leading to concern over the long-term academic consequences for students.

Additionally, the transition to online education in Nigeria has been fraught with challenges. Firstly, the lack of access to technology devices and reliable internet connections among students and teachers has been a major hurdle. A study conducted by Bridge International Academies in collaboration with 9mobile found that only 15% of Nigerian teachers had access to the internet in school and at home (Bridge International Academies, 2020). Additionally, Okebukola (2020) reported on the detrimental effects of insufficient infrastructure and training on the switch to online education, which further complicated the situation. He finds out that many schools are ill-equipped for online education; both teachers and students faced steep learning curves during the period of the lockdown. Moreover, Irele (2021) noted that numerous universities were ill-prepared for online learning, affecting the quality of education, while Umar (2021) emphasized socio-economic barriers that prevented many students from participating in online learning due to the lack of electricity and stable internet access in many regions. These findings reveal the setback, losses and impact recorded on the education sector during the period and highlighted profound implications for the future of education in Nigeria, especially in the post-COVID-19 era.

Collaborated with the forgoing, a survey by Edusko, an educational consultancy firm, revealed that only 7% of Nigerian teachers had received training on online teaching

methods (Edusko, 2020). The implication of the inadequate training of Nigerian teachers in online teaching methodologies is profound, as it directly hampers the effectiveness of digital learning initiatives and perpetuates educational inequities. With only 7% of teachers equipped with the necessary skills to engage students in virtual environments, a significant portion of the teaching workforce remain ill-prepared to facilitate the interactive and adaptive learning experiences that online education demands. This gap not only undermines the quality of education being delivered, leading to disengaged students and diminished learning outcomes, but also worsens existing disparities in access to quality education, particularly among underserved communities. Consequently, this scenario calls for an urgent overhaul of teacher training programs to incorporate comprehensive training in online pedagogies, digital tools, and effective curriculum delivery in virtual settings.

The necessity for innovative teacher training programs that incorporate computer education and digital literacy has become paramount in the post-COVID-19 era. By enhancing teachers' competencies, schools can better prepare to navigate future challenges and ensure that students emerge from any crisis with the skills necessary for success in an increasingly digital world.

The Significance of Computer Education in the Modern World

Computer education plays a crucial role in the modern world, where technology has become an integral part of daily life. With the rapid advancement of technology, access to computers and the internet has become more widespread, thereby making computer education an indispensable necessity. It has become fundamental in equipping individuals with the necessary skills to navigate the ongoing digital transformation in various sectors. According to the World Economic Forum (2021), organizations are increasingly prioritizing digital skills, with over 80% of jobs requiring proficiency in computer-related tasks by 2025.

In the Nigerian context, integrating computer education within the curriculum not only enhances student learning outcomes but also prepares them for future employment in an increasingly technology-driven world. Moreover, initiatives such as the United Nations' Sustainable Development Goal 4 aim to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. These initiatives emphasize the importance of digital literacy as part of education, as access to technology correlates significantly with economic growth and social development (UNESCO, 2020).

Research indicates that digital literacy directly correlates with improved academic performance and employability (Nwafor, 2021). An emphasis on technology competence is critical due to the growing reliance on digital tools and platforms in diverse sectors, including finance, agriculture, and healthcare. Ogunniyi & Kola (2021) reflect on this necessity, noting that proficiency in computer software is essential for effective participation in the modern economy. Furthermore, the World Economic Forum (2020) emphasizes that skills such as coding, data analysis, and digital problem-solving are fundamental to workforce adaptability in the future. Similarly, the United Nations

Educational, Scientific and Cultural Organization (2021) highlights the importance of incorporating technology in education to improve learning opportunities and outcomes for students globally. Also, recent studies illustrate how computer education fosters critical thinking and problem-solving skills, which are essential attributes in the 21st-century job market (Blume & Hekman, 2021). The integration of technology into teacher training programmes has been shown to improve teachers' pedagogical skills and enhance student engagement (Eze & Chidozie, 2020).

As society transitions into an era dominated by technology, the ability to efficiently use digital tools becomes critical. In essence, the significance of computer education in Nigeria goes beyond mere technical skills; it is a foundational pillar for economic development, improved employability, and sustainable growth in the digital age. As Nigeria seeks to bolster its educational framework post-COVID-19, focusing on computer education can bridge the skill gap and prepare a resilient workforce equipped for the challenges ahead. Consequently, having computer knowledge and skill not only enhances employability but also provides individuals with a competitive edge in the job market.

The Existing Skill Gap in Nigerian Schools

The COVID-19 pandemic has fundamentally altered educational landscapes worldwide, necessitating a reevaluation of teaching methodologies and competencies. In Nigeria, this shift revealed a pronounced skill gap in teacher training, particularly concerning computer education. Many teachers were unprepared to traverse the digital shift, leading to a significant discrepancy between the skills students possess and those required in a technology-driven society. This gap not only hinders effective teaching but also limits students' prospects for success in an increasingly digital world.

Statistics indicates that the effectiveness of computer education is heavily reliant on the proficiency of teachers. A study by Azubuike, Adegboye & Quadri (2020), suggests that inadequate teacher training in computer literacy has left many teachers ill-equipped to deliver quality instruction. More so, skill gap in Nigerian schools, particularly in the realm of computer education, presents a formidable obstacle to improving the quality of education. This gap is worsened by inadequate training programs for teachers, which frequently fail to equip them with the requisite skills and knowledge for effective teaching. Educational institutions are considered the bedrock of a nation’s development; thus, the competencies of teachers significantly influence students' learning outcomes. As Adu and Phillips (2015) highlighted, there exists a low level of computer literacy among teachers in Nigerian schools, which is detrimental not only to the teachers themselves but also compromised students' learning experiences during critical periods of remote education.

Report from the National Bureau of Statistics (2021) indicates that teachers require robust training in Information and Communications Technology (ICT) to foster a curriculum that leverages modern teaching tools. However, many teacher training colleges in Nigeria still adhere to outdated pedagogical models, largely focusing on

traditional teaching methods rather than integrating technology into learning. The lack of professional development opportunities specifically geared towards enhancing teachers' computer skills limits their effectiveness in the classroom and hinders their ability to engage students in an increasingly digital world.

Again, studies by Fagbemi & Olatoye (2020) point out that such existing skill gap can lead to a cycle of underperformance, where students lack essential computer skills, which are critical for success in higher education and the job market. Employers today expect a fundamental understanding of computers and related technologies from prospective employees, but if teachers are ill-equipped to impart this knowledge, students are left at a disadvantage.

It is also upsetting to note the skill gap extends beyond mere computer literacy; it encompasses a comprehensive understanding of how to integrate technology into the curriculum to enhance learning outcomes. Teachers must be adept not only at using technological tools but also at implementing them in pedagogically sound ways that foster student engagement and collaboration. According to recent studies, there is a pressing need for professional development programs focused on equipping teachers with the competencies required to navigate the digital environment effectively (Ogunyemi, Obasaju, & Ayo, 2022). Thus, the skills gap in Nigerian schools is not solely a byproduct of the pandemic but has persisted over the years due to insufficient investment in teacher professional development. The lack of structured training programs aimed at enhancing computer literacy among educators has perpetuated a cycle of ineffectiveness. According to Dada (2021), bridging this gap is imperative for cultivating a generation of students who are not just consumers of technology but also critical thinkers and innovators. Therefore, enhancing teacher training by incorporating robust computer education programs is a vital step toward equipping teachers with the necessary skills to effectively engage students in the post-COVID-19 society.

Therefore, a pertinent implication for Nigerian schools is that addressing the skill gap among teachers must be prioritized to foster an effective learning environment. Neglecting this issue perpetuates inequities in education and compromises the nation’s desire to use education as an instrument per-excellent for development, and ability to compete in the global economy. As the post-COVID-19 era prompts a shift towards more digital learning environments, the imperative for adequately trained teachers has never been more pronounced. In light of the current study, bridging this skill gap through comprehensive teacher training in computer education emerges as a key strategy for enhancing educational outcomes and preparing students for future challenges.

The Urgency of Addressing the Skill Gap

The urgency to address this skill gap cannot be overstated, as it directly impacts the quality of education and the students' preparedness to productively participate in a technology-driven world. Agbo and Nwafor (2021) describe how the implementation of modern teacher training programs that focus on computer competency can dramatically change the educational landscape in Nigeria. They argue that such training not only

empowers teachers but also resonates positively with students, leading to improved academic performance and enhanced engagement in learning. Also, the National Bureau of Statistics (2021) reported a rapid increase in technology-dependent jobs, yet there is a parallel inadequacy in the workforce's skill set to meet this demand. This mismatch presents a dual challenge: without properly trained teachers, the current generation of students is at risk of falling behind in critical digital competencies, which are now essential for success in both local and global job markets (Okebukola, 2021). Bridging this gap is crucial not only for the individual development of teachers and students but also for the overall economic progress of the nation.

Furthermore, addressing this issue aligns with global educational reforms that prioritize 21st century skills, including critical thinking, creativity, and digital literacy. According to the Organization for Economic Cooperation and Development (OECD, 2020), education systems that invest in robust teacher training programs see significant improvements in student outcomes. For Nigeria, integrating enhanced computer education into teacher training can facilitate a more equitable learning environment, engaging students and making learning more interactive and relevant to contemporary societal demands.

The significance of addressing the skill gap in teacher training also extends to the broader educational ecosystem. Collaborative initiatives between government agencies, educational institutions, and industry stakeholders are paramount in developing comprehensive training programs tailored to the needs of Nigerian teachers. These partnerships can yield innovative solutions, such as mentorship programs and online workshops, fostering a culture of continuous learning among teachers.

In bridging the skill gap in computer knowledge and skill is not merely a reactive measure to the challenges posed by the pandemic; it is an investment in Nigeria's educational future. By enhancing the digital competency of teachers, the education sector can ultimately produce a generation of technologically proficient students, equipped to thrive in an increasingly digital economy. As articulated by the African Union (2021), the call to action is clear: addressing this skill gap is essential for realizing the potential of Africa's youth and ensuring sustainable development for the continent.

Conclusion

In light of the challenges posed by the COVID-19 pandemic, it is evident that the education sector in Nigeria must undergo significant transformation, particularly in enhancing teacher training in computer education. The abrupt shift to online learning not only highlighted the inadequacies in technological preparedness among teachers but also aggravated the existing disparities in digital literacy. This study has elucidated the crucial role of well-trained teachers in fostering an engaging and effective digital learning environment, thereby underscoring the pressing need for comprehensive professional development initiatives.

The literature reviewed indicates that merely adopting technology in education is insufficient; rather, full integration necessitates equipping teachers with the requisite

skills and confidence to utilize technology innovatively. Collectively, the literature highlight the critical need for comprehensive reforms in teacher training and educational infrastructure to bridge the existing skill gap and ensure equitable access to quality education for all students in the post-COVID-19 era. Thus, to effectively bridge the skill gap in Nigerian education systems, particularly in the context of enhancing teacher training in computer education, it is imperative to take a multidimensional approach focusing on educational technology and teacher pedagogy. The following recommendations are proposed:

Recommendations

1. **Infrastructure Improvement**: The government should allocate resources towards enhancing the technological infrastructure in schools. This includes ensuring that all educational institutions have reliable internet access, modern devices, and technical support systems in place to facilitate effective online learning. As pointed during discussion on the impact of the pandemic on education, the digital divide, exacerbated by socio-economic factors, highlights the urgent need for targeted investments in infrastructure and technology to ensure equitable access to online learning resources. As Adebayo & Adebayo (2021) and Umar (2021) illustrate, many students were disadvantaged due to a lack of devices and reliable internet connectivity, which poses challenges to the effectiveness of any future digital learning initiatives.
2. **Emphasis on Digital Literacy**: Given the observed global shift towards digital learning modalities in post-COVID-19, there should be a deliberate initiative to compel teachers to be equipped not just with the skills to use technology, but also with a strong understanding of digital citizenship and information literacy, digital preparedness and productivity in the global digitized world as advocated by Ribble (2015), Dada (2021) and African Union (2021). This can be facilitated through workshops that emphasize safe and effective online practices. A model that intensifies training on digital tools, online pedagogies, and effective instructional strategies; incorporates blended learning where teachers engage in both face-to-face and online instructions would ensure ongoing skill enhancement, instructiveness, and flexibility.

   As pointed out by Okebukola (2020) and Irele (2021), lack of technological skills and training are significant barriers to effective online learning; thus raises the necessity of comprehensive training programs for teachers to enhance their technological proficiency, fostering a more robust and adaptable educational environment. Addressing these challenges is essential not only for improving digital literacy but also for bridging the skill gap within the teaching community, ultimately leading to a more resilient educational system that can withstand future disruptions.
3. **Curriculum Integration and Technology Pedagogy**: The Framework for 21st century learning emphasizes the need for teachers to adopt a pedagogical

approach that includes technology as an integral component of the curriculum (Partnership for 21st Century Skills, 2009). Therefore, professional development should not only focus on the "how" of using technology but also the "why," allowing teachers to understand the impact of technology on learning outcomes. Relevant methods and experiences from countries that have succeeded in such teacher training programmes, which integrate ICT training into existing curricula, could serve as templates for Nigerian schools. Such curriculum redesign will focus on 'share experience and prosperity' for our society.

4. **Public-Private Partnerships**: Extensive research indicates that partnerships between government and the private sector can facilitate resource allocation for educational technology (Sekararani & Sadiq, 2020) and development. By creating strategic alliances with tech companies and spirited citizens, Nigerian schools could gain access to necessary resources such as computers, internet infrastructure, and educational software. Such partnerships can also be channel of giving it back to the society, and provide mentorship opportunities for teachers, thus enhancing their competencies.
5. **Community Engagement and Stakeholder Collaboration**: It is crucial to involve the local community and other stakeholders in the implementation of training programs. Research suggests that community engagement can lead to better resource mobilization, management, and increased accountability. Involving parents and local enterprises in supporting computer education initiatives can create a supportive environment for teachers and students alike. In fact, it is one of the safest ways to protect these education facilitating gadgets.
6. **Monitoring and Evaluation Systems**: Implementing a robust system for monitoring and evaluating the effectiveness of teacher training programmes can provide valuable insights. By establishing clear codes for success, Nigerian educational authorities can continuously assess and adapt the training initiatives to enhance their effectiveness. Such regular assessments will provide vital feedback for refinement and improvement.

By implementing these recommendations, Nigeria can significantly enhance the quality of teacher training and consequently, student outcomes in the digital age. Such initiatives not only prepare teachers for the immediate demands of modern education but also contribute to a more technologically skilled workforce, preparing future generations for the increasingly digital global economy.

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