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The Role of Blackboard Technology for School System and Processes Transformation in Nigerian Tertiary Institutions

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Abstract

This study aims to explore the role of Blackboard technology in transforming the school system and processes in Nigerian tertiary institutions. Blackboard technology is a learning management system that provides a virtual platform for educators and students to interact and engage in the learning process. The study begins by examining the current state of the Nigerian tertiary education system and the challenges it faces. These challenges include limited access to quality education, outdated teaching methods, and inadequate infrastructure. The introduction of Blackboard technology has the potential to address these challenges and bring about much-needed transformation. The study then delves into 25 various studies right from twenty years back that pave the ways in which Blackboard technology can transform the school system and processes. Firstly, benefits of blackboard technology in Nigerian tertiary institutions, allowing students to access educational resources and participate in classes from anywhere, at any time. This is particularly beneficial for students in remote areas or those with limited mobility. Secondly, addressing infrastructure and technological challenges in Nigeria. By providing a platform for sharing course materials, submitting assignments, and engaging in discussions. This enhances collaboration and interaction, leading to a more engaging and interactive learning experience. Furthermore, Blackboard technology supports personalized learning. It allows educators to create customized learning paths and tailor educational content to individual students' needs and learning styles. This promotes student-centered learning, encouraging active participation and improving learning outcomes.

Keywords | *Blackboard Technology, School System, School Process, Transformation, Tertiary Institution, Nigerian Educational System.*

INTRODUCTION

The education system in Nigeria is structured into six years of primary school, three years of junior secondary school, three years of senior secondary school, and four years of university education (Oyesola & Ojo, 2019). The system is overseen by the Ministry of Education and includes both public and private institutions. Education is compulsory for children between the ages of 6 and 15, and the curriculum covers a wide range of subjects, including mathematics, English, social studies, and sciences. Technology plays a crucial role in enhancing education in Nigeria (Ajayi, et al., 2017; Bradford et al., 2007). It provides access to a wealth of information and resources, facilitates interactive and engaging learning experiences, and enables personalized learning. Additionally, technology helps bridge the gap in access to quality education, especially in remote areas, and prepares students for the demands of the modern workforce (Reid & Reid, 2019). The integration of technology in education also fosters critical thinking, problem-solving, and digital literacy skills among

students. According to Ajayi et al. (2017), the integration of Blackboard technology in Nigerian tertiary institutions has shown promise in improving access to educational resources, facilitating communication between students and instructors, and enhancing the delivery of course materials. However, the authors also highlight the need for adequate infrastructure and technical support to ensure the successful implementation of Blackboard technology in the Nigerian educational setting. On the other hand, Oyesola and Ojo (2019) emphasize the challenges associated with the adoption of Blackboard technology, including issues related to internet connectivity, digital literacy, and institutional readiness. Despite these challenges, the authors acknowledge the potential for Blackboard technology to revolutionize teaching and learning practices in Nigerian tertiary institutions.

Nigerian tertiary institutions encounter various challenges, including inadequate funding, curriculum implementation issues, brain drain, and the mismatch between graduates' skills and the needs of the labor market (Ajayi et al., 2017). The weak commitment of the Nigerian government to the nation's tertiary education system, manifested in poor funding, is a significant concern (Oyesola & Ojo, 2019). Additionally, the inability to produce groundbreaking research, loss of skilled workers, falling standards of education, and the loss of confidence in the quality of academic programs contribute to the challenges faced by these institutions (Yaacob et al., 2023). Furthermore, the implementation of the curriculum in tertiary institutions has been identified as a problem, necessitating the adequate training of academic staff to meet the demands of the 21st-century globalized world.

Before the 21st century, teaching and learning in Nigeria, including tertiary education, primarily relied on traditional face-to-face methods (Ajayi et al., 2017). This traditional approach has limitations, especially in the context of the information and knowledge age. The dominance of traditional teaching methods hinders the effective integration of innovative solutions, such as ICTs, which are essential for meeting a variety of educational objectives in Nigerian tertiary institutions (Mohd et al., 2024; Saqr & Al-somali, 2024). The limitations of traditional teaching methods underscore the need for a shift towards more innovative and technology-driven approaches to education. There is a growing recognition of the need for innovative solutions in Nigerian tertiary education. Stakeholders emphasize the importance of monitoring and evaluating the use of ICTs to meet educational objectives (Alzubi, 2024). Additionally, there are calls for the articulation of the added value of ICTs through the assessment and mitigation of risks, as well as the planning and implementation of necessary change management processes (Uwizeyimana et al., 2024). Furthermore, it is recommended that tertiary institutions be well-equipped to face the challenges and opportunities presented by ICTs, helping education systems not only meet the Millennium Development Goals but also adapt to the demands of the 21st century (Nyabawa, 2016). Innovative reforms, such as revamping the Student Industrial Work Experience Scheme (SIWES) and establishing knowledge transfer partnerships between educational institutions and local businesses, are also proposed as solutions to improve the competitiveness and productivity of Nigerian companies and provide students with industry experience (Ajayi et al., 2017).

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Blackboard technology, specifically Blackboard 9.1, is a widely used learning management system (LMS) that facilitates the delivery of course materials, communication, and assessment tools in an online environment (Yaacob et al., 2023). The implementation process of Blackboard 9.1 at the University of Manchester was management-driven, focusing on project planning and implementation, which characterized a successful deployment of an enterprise e-Learning and managed hosting environment (Rodriguez, 2013). The University of Manchester's experience with Blackboard 9.1 provides an example of successful implementation of the technology (Rodríguez, 2013). The decision to update from Blackboard Vista to Blackboard 9.1 was driven by the expectation that the latter version would be more user-friendly, thus facilitating greater use of the platform (Dabeel, 2024; Koksal, 2004). Additionally, Blackboard technology has been successfully implemented in various countries, including the United States, where it has been used to deliver course materials, facilitate communication, and provide assessment tools in an online environment (Algraini, 2024).

The potential benefits of implementing Blackboard technology in Nigerian tertiary institutions are significant (Yaacob et al., 2023). The technology can provide a platform for delivering course materials, facilitating communication between students and instructors, and offering assessment tools in an online environment (Maajoon & Kirti, 2015). This can enhance the accessibility of educational resources and support distance learning initiatives, especially in regions where traditional educational infrastructure may be limited (Algraini, 2024; Bradford et al., 2007). Furthermore, the interactive and reproducible nature of Blackboard technology can create an engaging and interactive learning environment, which is particularly valuable for institutions aiming to extend the learning experience to a large number of students (Yaacob et al., 2023). Overall, the successful implementation of Blackboard technology in various institutions, including the University of Manchester, demonstrates its potential to enhance the delivery of educational resources and support distance learning initiatives, making it a valuable tool for Nigerian tertiary institutions seeking to expand their educational reach and improve the overall learning experience for students.

The purpose of this paper is to provide a comprehensive overview of the education system in Nigeria, emphasizing the significance of technology in enhancing educational outcomes. By exploring these topics, readers will gain insights into the structure of Nigeria's education system and the transformative impact of technology on learning and teaching practices. Additionally, the paper aims to highlight the role of technology in addressing educational challenges and fostering a more inclusive and dynamic learning environment in Nigeria. Nigeria's tertiary education system faces several challenges, which impact the quality of education and the preparedness of graduates for the workforce. Traditional teaching methods dominate the landscape, but there is a growing recognition of the need for innovative solutions, particularly in the integration of Information and Communication Technologies (ICTs) into the educational process.

METHOD

This study aims to explore the role of Blackboard technology in transforming the school system and processes in Nigerian tertiary institutions. The methodology employs a semi-systematic literature review framework, which allows for a comprehensive examination of existing literature alongside qualitative insights from stakeholders within the educational sector.

The research design for this study is structured around a semi-systematic literature review approach based on twenty-five (25) articles sources from four different research databases as shown in *Figure 1*. This design facilitates an in-depth exploration of relevant scholarly work sourced from various research databases, such as Web of Science, Scopus, Science Direct, and Google Scholar as shown in *Figure 1*. The primary objective is to synthesize findings from various sources to understand the impact of Blackboard technology on educational practices in Nigerian tertiary institutions.

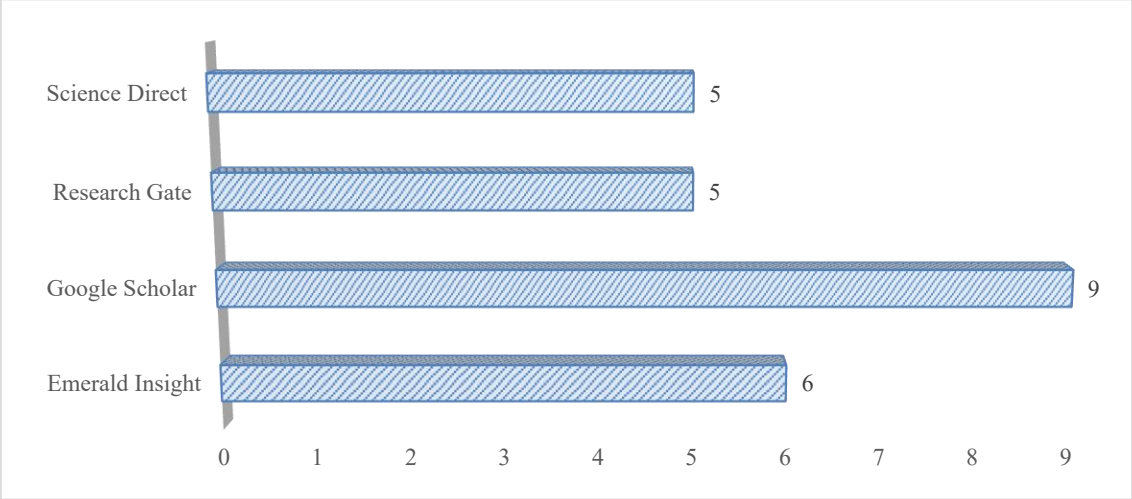

Figure 1. Distribution of studies based on four research databases

This study consulted the findings of prior studies of twenty-one (21) years back, from 2004 – 2024 as shown in *Figure 2,* to support the study objectives. The authors consulted various research articles from different research databases such as Google Scholar, Emerald Insight, Research Gate, and Science Direct (see *Figure 2*).

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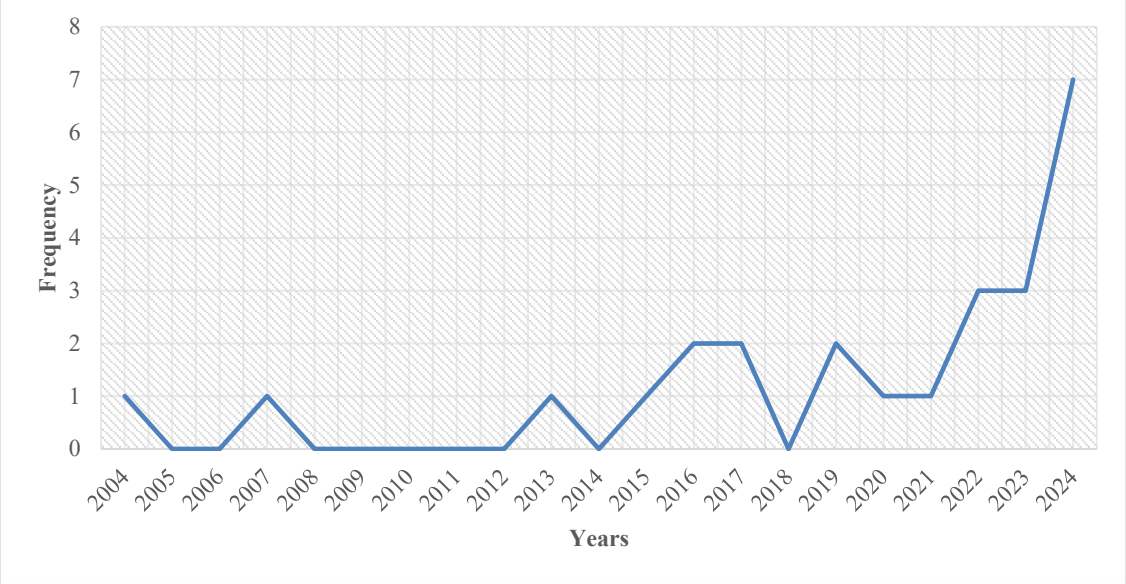

Figure 2. Distribution of studies over time

A systematic search for relevant literature will be conducted using academic databases, educational journals, and conference proceedings. The selection criteria will encompass peer-reviewed articles, reports, and case studies published within the last decade to ensure contemporaneous relevance. Keywords such as "Blackboard technology in Nigeria," "e-learning platforms," "educational technology transformation," and "Nigerian tertiary institutions" will guide the search process to gather a diverse range of studies.

Inclusion and exclusion techniques will be utilized to refine the literature sample (see Table 1). This ensures the reliability and relevance of the data collected.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria **Studies will be included if:**	**Exclusion Criteria** **Conversely, studies will be excluded all:**
It specifically address the use of Blackboard technology in Nigerian tertiary institutions and provide empirical data or theoretical insights into its impact on school systems and processes	Studies that are not peer-reviewed, lack relevance to the Nigerian context, or are published prior to 2004 will be excluded

The data collection process involves the literature review. Initially, relevant literature were gathered through comprehensive searches of online academic databases (see *Figure 3)*. Following the literature review.

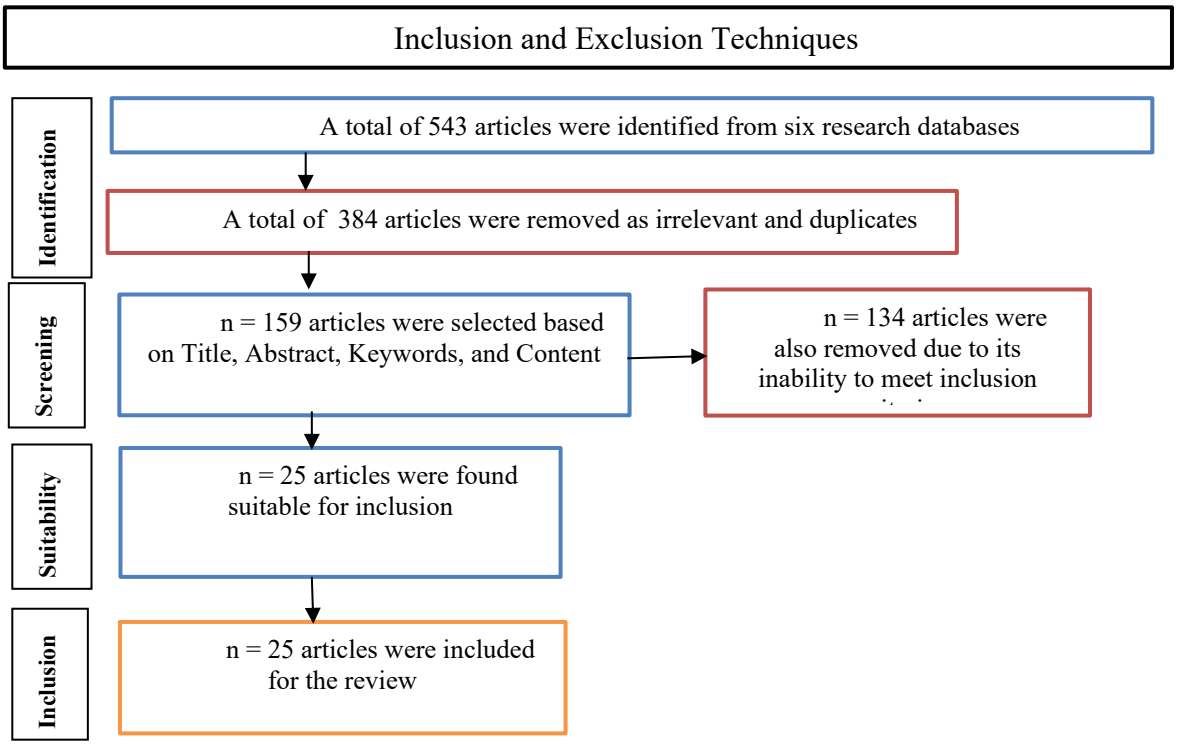

Figure 3. PRISMA sampling selection diagram

Once the literature data are collected, a thematic analysis will be performed to synthesize the findings. The literature will be categorized based on themes that emerge from the analysis, identifying common patterns, challenges, and opportunities related to the use of Blackboard technology in Nigerian tertiary institutions.

Ethical considerations will be integral to the research process. Informed consent will be obtained from all literature review. The study will adhere to ethical guidelines established by relevant academic institutions and research boards.

RESULTS AND DISCUSSION

Benefits of Blackboard Technology in Nigerian Tertiary Institutions

a. *Enhanced accessibility to educational resources*

Blackboard technology in Nigerian tertiary institutions enhances accessibility to educational resources. This is particularly important in a country like Nigeria, where internet penetration stands at 42%, implying that more than half of the population is not connected to the internet (Ajayi et al., 2017). The use of mobile devices in Nigeria presents a high potential for harnessing digital technologies in higher education institutions, despite the challenges of internet connectivity. The popularity of learning management systems (LMSs) in English Language Teaching (ELT) has been enhanced due to extensive availability of technological infrastructure for educational institutions, which supports the constructive application of Blackboard technology (Uwizeyimana et al., 2024).

b. *Facilitation of blended learning and flexible education*

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Blackboard technology facilitates blended learning and flexible education in Nigerian tertiary institutions. The higher education sector in Nigeria is currently undergoing a massive digital transformation, with trends like e-teaching and e-assessment becoming the norm (Oyesola & Ojo, 2019). Teachers view Blackboard as a valuable tool for distance learning, providing benefits such as increased student engagement, flexibility, and improved communication (Alhumsi, 2021; Rodríguez, 2013). Additionally, universities in Nigeria are investing heavily in learning technologies to facilitate improvements in the quality of learning, and Blackboard is one of the platforms being utilized for this purpose.

c. *Improvement of administrative processes and communication*

Blackboard technology also contributes to the improvement of administrative processes and communication in Nigerian tertiary institutions. It is observed that financial support, such as the flexibility of payment arrangements of tuition fees and educational loans, is a strong catalyst for the selection of universities by students and parents, indicating the role of technology in administrative processes (Alfehaid et al., 2023; Kleinveldt et al., 2016; Maajoon & Kirti, 2015). Furthermore, Blackboard technology in Nigerian tertiary institutions is seen as being able to facilitate and catalyze pedagogical innovations, such as blended learning and collaborative learning, which present new perspectives for Nigerian educators (Al-khresheh & Alkursheh, 2024; Alfailakawi, 2022). Overall, the adoption of Blackboard technology in Nigerian tertiary institutions is seen as a positive step towards enhancing accessibility to educational resources, facilitating blended learning and flexible education, and improving administrative processes and communication (Larkin & Belson, 2017; Rodríguez, 2013; Salman, 2023).

Infrastructure and Technological Challenges in Nigeria

Nigeria faces significant challenges related to infrastructure and technological limitations. The country's infrastructure, including transportation, energy, and communication systems, is often inadequate and outdated, hindering economic development and access to essential services (Lawson-body et al., 2020). Additionally, technological limitations, such as limited access to high-speed internet and outdated technological systems, further exacerbate these challenges (Kleinveldt et al., 2016). These limitations have a direct impact on various sectors, including education, healthcare, and business, hindering the country's overall progress and development.

Training and capacity building for educators in Nigeria are crucial for improving the quality of education in the country (Rodríguez, 2013; Salman, 2023). Educators often face challenges related to outdated teaching methods, limited access to professional development opportunities, and inadequate resources (Yaacob et al., 2023). Capacity building programs aimed at enhancing educators' skills, updating their knowledge of modern teaching techniques, and providing access to educational resources can significantly improve the quality of education in Nigeria (Alfailakawi, 2022; Dabeel, 2024). Furthermore, training programs should focus on equipping educators with the necessary skills to effectively

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integrate technology into the learning process, thereby addressing the technological limitations in the education sector.

Ensuring inclusivity and access for all students is a critical consideration in Nigeria's education system. The country faces challenges related to providing equal educational opportunities for students from diverse backgrounds, including those in rural areas and students with disabilities (Ajayi et al., 2017). Efforts to ensure inclusivity and access should encompass the development of inclusive educational policies, the provision of resources for students with special needs, and the implementation of technology-enabled learning platforms to reach students in remote areas (Alzubi, 2024; Uwizeyimana et al., 2024). Additionally, capacity building for educators should include training on inclusive teaching practices to cater to the diverse needs of students (Maajoon & Kirti, 2015). In addressing these challenges, it is essential for Nigeria to prioritize infrastructure development, invest in technological advancements, and focus on comprehensive training and capacity building programs for educators (Alhumsi, 2021; Lawson-body et al., 2020). These efforts are crucial for fostering a more inclusive, accessible, and technologically advanced education system in the country.

Improved Access to Educational Resources: The integration of Blackboard technology has facilitated access to educational resources such as lecture notes, readings, and multimedia content, thereby enhancing the learning experience for students (Ajayi et al., 2017). Enhanced Communication and Collaboration: Blackboard technology has enabled improved communication and collaboration between students and instructors, allowing for the exchange of ideas, feedback, and discussions outside the traditional classroom environment (Uwizeyimana et al., 2024). Challenges of Infrastructure and Technical Support: The successful implementation of Blackboard technology in Nigerian tertiary institutions is contingent upon adequate infrastructure and technical support, including reliable internet connectivity and IT assistance (Ajayi et al., 2017). Digital Literacy and Institutional Readiness: The adoption of Blackboard technology has highlighted the need for initiatives aimed at enhancing digital literacy among students and educators, as well as institutional readiness to support the integration of technology in educational processes (Kleinveldt et al., 2016; Oyesola & Ojo, 2019).

Case Studies: Successful Implementation of Blackboard Technology

a. *Specific examples of Nigerian tertiary institutions using Blackboard*

In recent years, Nigerian tertiary institutions have increasingly embraced the use of Blackboard technology to enhance their educational delivery. For instance, the University of Lagos has successfully implemented Blackboard as a learning management system, providing a centralized platform for course materials, assignments, and communication between students and instructors (Ajayi et al., 2017). Similarly, Ahmadu Bello University has integrated Blackboard into its academic framework, allowing for the seamless dissemination of course content and facilitating interactive learning experiences for students Oyesola & Ojo, 2019).

b. *Impact on student learning outcomes and administrative efficiency*

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The adoption of Blackboard technology in Nigerian tertiary institutions has demonstrated a positive impact on both student learning outcomes and administrative efficiency. Research conducted at Obafemi Awolowo University has shown that the use of Blackboard has led to improved student engagement, enhanced collaboration, and better academic performance, indicating a positive correlation between the technology and student learning outcomes (Lawson-body et al., 2020). Furthermore, the implementation of Blackboard has streamlined administrative processes, such as course scheduling, grading, and communication, leading to increased efficiency and reduced administrative burden on faculty and staff (Ahmed & Saidu, 2022).

c. *Lessons learned and best practices*

Through the successful implementation of Blackboard technology, Nigerian tertiary institutions have gleaned valuable lessons and identified best practices for maximizing its benefits (Abu-dalbouh, 2022; Alfailakawi, 2022; Nyabawa, 2016). One key lesson learned is the importance of comprehensive training and support for both faculty and students to ensure effective utilization of the platform. Adequate training programs have been instrumental in empowering instructors to leverage the full potential of Blackboard for instructional purposes, while also enabling students to navigate the platform with ease and proficiency (Al-khresheh & Alkursheh, 2024). Additionally, the establishment of robust technical support mechanisms has proven crucial in addressing any challenges that may arise during the integration and use of Blackboard, contributing to a smoother implementation process and sustained user satisfaction (Salman, 2023). Overall, the successful implementation of Blackboard technology in Nigerian tertiary institutions serves as a compelling case study, highlighting the positive impact on student learning outcomes, administrative efficiency, and the importance of comprehensive training and support for all stakeholders involved in the educational process.

CONCLUSION

Blackboard technology has the potential to significantly transform education by providing a platform for e-learning, m-learning, and distance learning. The evolution of technology in teaching, from distance learning to e-learning and finally to m-learning, has been instrumental in reshaping knowledge delivery using information technology and digital media. Blackboard, as a leading global educational technology solution, offers an improved and immersive learning experience for students and related educational ecosystems. Stakeholders and decision-makers in the education sector need to recognize the potential of Blackboard technology and take proactive steps to leverage its benefits. The implementation process of technology in education, such as Blackboard 9.1, requires careful consideration of the perspectives and power levels of stakeholder groups to avoid conflicts and ensure democratic credentials. Decision-makers can use a surgical approach to data collection and analysis based on future alternatives and scenarios to identify essential strategies for value creation and build clear accountability for results.

Implementing recommendations for a successful policy and collaboration with technology partners and stakeholders, as well as strategies for overcoming challenges and

ensuring sustainability, is crucial for the success of any initiative. This aligns with the need for policies to be accessible to all individuals, regardless of their abilities. In addition, it is important to fully disclose essential information in policy documents, allowing readers to focus on the content without being distracted by inconsistencies or omissions in punctuation, capitalization, in-text citations, references, and presentation of statistics. This transparency is crucial for effective policy implementation and understanding. Collaboration with technology partners and stakeholders is vital for the successful implementation of any initiative. Addressing complex environmental problems, such as climate change and biodiversity loss, requires the collaboration of stakeholders with diverse perspectives, including government, civil society organizations, local communities, and businesses. Multi-stakeholder partnerships are regarded as crucial in efforts toward sustainable development, emphasizing the importance of collaboration in addressing environmental challenges.

Strategies for overcoming challenges and ensuring sustainability should focus on addressing the complexity and severity of environmental problems. Implementing appropriate solutions to these problems requires the collaboration of actors beyond scientists, including government, civil society organizations, local communities, and businesses. This highlights the need for comprehensive and inclusive strategies that involve diverse stakeholders. In conclusion, the successful implementation of policy considerations, collaboration with technology partners and stakeholders, and strategies for overcoming challenges and ensuring sustainability requires a commitment to accessibility, transparency, collaboration, and inclusivity.

Looking ahead, the future outlook for education in Nigeria with the integration of Blackboard technology holds great promise. The use of Learning Management Systems (LMS) like Blackboard can enhance interactions among primary stakeholders, including students, instructors, and the overall educational ecosystem. As technology continues to advance, Blackboard and similar platforms have the potential to play a crucial role in shaping the educational landscape, providing effective tools for teaching and learning in a rapidly changing technological world.

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