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Article

Rethinking secondary school education in the new media age: A consideration of the EdoBEST 2.0 programme in Edo State, Nigeria

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Abstract: Eliminating illiteracy has been one of the Nigerian government's top priorities since its independence in 1960. The ministries of education and communication in Nigeria believe that "literacy" and "numeracy" are pivotal for economic, academic, and all-round societal development in the new media age. To ensure that literacy and numeracy transcend all borders of Nigeria, the federal and state governments often strategize on providing students with well-designed learning environments, technologies, teachers, and academic resources that facilitate functional education. This, perhaps, explains why the Edo State Basic Education Board (ESBED), the World Bank and Bridge International Academies (BIA) formed a public-private partnership (PPP) to develop the Edo Basic Education Sector Transformation (Edo-BEST) 1.0 and 2.0 programmes that focus on promoting primary and secondary schools' education respectively in Edo State, Nigeria. The EdoBEST@Home unimodal mobile-based remote learning programme offers interactive audio lectures, digital self-study activity packages, digital stories, mobile interactive quizzes, learning aids for parents, and virtual classrooms allowing teacher-student interaction. Moored in Marshall McLuhan's Technological Determinism Theory (TDT), this study probes the effectiveness and degree of attainment of the objectives of the EdoBEST 2.0 programme. Using a survey as a research design and a questionnaire as an instrument of data collection, three secondary schools (Ogbe Boys Grammar School, Idia College and Asoro Grammar School) in Benin City, the capital of Edo State were examined. The study combined this with key person interviews (KPIs) and triangulated the methodology with a historical-analytic technique. The findings of the study showed that the EdoBEST 2.0 programme has not been able to enhance secondary school education via the new media because the purported and widely publicized new media gadgets disbursed by the Edo State government to secondary school students and teachers, are to a large extent, merely hypothetical as the students and teachers have no access to the gadgets. With a population of over 4 million individuals, half of whom are under 30, Edo State lacks the connection and technological access necessary for remote learning. The study, therefore, recommended that the EdoBEST 2.0 programme be revamped and all factors hampering its set goals be addressed to ensure a positive impact on the secondary school educational ecosystem in Edo State. The federal and state governments must also review the academic syllabi to factor in the compulsory utilisation of new media technologies in teaching and learning and gradually phase out old-fashioned traditional teaching and learning methods such as the use of chalk and blackboard and the use of lesson notebooks without any digital backup.

Keywords: EdoBEST 2.0 programme; new media; secondary school education; TDT; digital backup

1. Introduction

In Nigeria, the government has long recognised the significance of eradicating illiteracy and innumeracy as a crucial step towards achieving national development. The ministries of education and communication firmly believe that literacy and numeracy are not only essential for individual growth but also play a vital role in economic prosperity, academic success, societal progress, and overall development, particularly in the modern era of new media [1]. To ensure that literacy and numeracy are accessible in all corners of the country, both the federal and state governments have devised comprehensive plans aimed at providing students with well-designed learning environments, advanced technologies, qualified teachers, empowering initiatives, and academic resources that facilitate functional education [1].

In line with this vision, the Edo State Basic Education Board (ESBEB), in collaboration with the World Bank and Bridge International Academies (BIA), has established a pioneering public-private partnership (PPP) known as the Edo Basic Education Sector Transformation (Edo-BEST) initiative. This ambitious programme encompasses two phases: Edo-BEST 1.0 and Edo-BEST 2.0, focussing on enhancing primary and secondary school education, respectively [2]. The overarching goal of the Edo-BEST initiative is to revolutionize the educational landscape by introducing innovative approaches and leveraging the potential of new media technologies.

Within the Edo-BEST initiative, the specific focus of this study is on the EdoBEST 2.0 programme, which specifically targets secondary school education. Building upon the successes and lessons learned from the Edo-BEST 1.0 phase, the EdoBEST 2.0 programme emphasizes harnessing the power of new media technologies to enhance the teaching and learning experience [3]. Recognising the transformative potential of new media in engaging students, fostering interactive learning environments, and promoting digital literacy and numeracy among secondary school students, the EdoBEST 2.0 programme aims to pull these technologies to bridge the educational gap and provide students with the necessary skills for success in the new media age [2].

New media, in the context of this study, refers to the evolving forms of media that have emerged in the digital age. It encompasses various digital platforms, technologies, and communication channels that enable the creation, dissemination, and consumption of information and entertainment [4,5]. Examples of new media include the internet, social media platforms (SMPs), mobile applications, digital audio and video content, and interactive multimedia tools. These platforms and technologies have profoundly transformed the way information is accessed, shared, and communicated, opening up new avenues for innovative educational practices and pedagogical approaches [6,7].

Given the growing influence of new media in contemporary society, it is imperative to explore how these technologies can be effectively harnessed to enhance secondary school education. The EdoBEST 2.0 programme serves as an innovative approach that integrates new media technologies into the teaching and learning process [3]. Through examining the implementation and impact of this programme, this study aims to provide valuable insights into the potential benefits, challenges, and

implications of integrating new media in secondary school education, using the Edo State, Nigeria situation as a pivot of analysis and discussion.

Figure 1. EdoBEST 2.0 teachers using smartphones to enhance education [3].

As corroborated on **Figure 1**, this article critically analyses and rethink secondary school education in the new media age, specifically focusing on the EdoBEST 2.0 programme. By assessing the effectiveness of the EdoBEST 2.0 programme in improving learning outcomes among secondary school students, the study sheds light on the efficacy of integrating new media technologies in enhancing educational experiences among the growing population in Edo State, Nigeria. Furthermore, it examined the role of new media technologies, such as mobile-based remote learning, interactive audio lectures, digital self-study activity packages, and virtual classrooms, in creating engaging and interactive learning environments.

It is essential to identify the challenges and opportunities associated with integrating new media technologies in secondary school education. By exploring the perceptions and experiences of students, teachers, and parents regarding the implementation and utilisation of new media in the EdoBEST 2.0 programme, the study aims to provide a comprehensive understanding of the practical implications of incorporating new media in the educational context. This understanding can help inform policymakers, educators, and stakeholders about the necessary strategies, resources, and support needed to optimize the use of new media technologies in secondary school education. Through a wide-ranging analysis of the implementation and impact of the EdoBEST 2.0 programme, this study aspires to contribute to the ongoing discourse on leveraging new media technologies to create meaningful and engaging learning experiences in the new media age.

1.1. Statement of the problem

Integrating new media technologies in secondary school education is widely recognised as important for Nigeria’s efforts to eradicate illiteracy and innumeracy

and promote national development [3,8]. However, little attention has been paid to effectiveness and implications of leveraging these technologies to enhance teaching and learning experiences in secondary schools. Existing literature provides insights into the role of new media during the COVID-19 pandemic [3] and the impact of ICT-training initiatives on workforce productivity [1]. These studies have not sufficiently addressed the specific outcomes and impact of integrating new media technologies in secondary school settings.

The current study aims to fill this gap by examining the implementation and impact of the EdoBEST 2.0 programme, which emphasizes the integration of new media technologies in secondary school education. While existing literature has provided insights into the role of new media technologies during crisis and short-term initiatives, there is a lack of research on the long-term implications and sustainability of such integration in secondary school education [1]. It is in this context that this study examines the possible long-term effects of the EdoBEST 2.0 programme on teaching and learning practices, student engagement, digital literacy, and educational outcomes in secondary schools.

The study also explores the challenges and barriers that may hinder the successful implementation and utilisation of new media technologies in secondary school settings. Existing research often overlooks the social, cultural, and pedagogical factors that influence the effectiveness of these technologies in the classroom [3]. Through examining the perceptions and experiences of students, teachers, and parents regarding the implementation and utilisation of new media technologies in the EdoBEST 2.0 programme, this study gives an understanding of the factors and offers practical recommendations for optimising the integration of new media in secondary school education in the area under investigation.

1.2. Research objectives

The objectives of this study are to:

1) examine the degree of implementation of the EdoBEST 2.0 programme in the integration of new media technologies in secondary school education in Edo State, Nigeria.
2) evaluate the impact of the EdoBEST 2.0 programme on teaching and learning practices in secondary schools in Edo State, Nigeria.
3) appraise the challenges of students and teachers in utilising the EdoBEST 2.0 programme in secondary schools in Edo State, Nigeria.

2. The EdoBEST 2.0 programme

The EdoBEST 2.0 programme was launched in Edo State, Nigeria in 2022 as an extension of the existing Edo Basic Education Sector Transformation (Edo-BEST) 2.0 programme, which commenced in April 2018 [3,9]. It was developed as a response to the challenges faced by the education system, including a large out-of-school child population, threats to schooling due to insurgent activities, and the impact of the COVID-19 pandemic. EdoBEST 2.0 programme has five key pillars, namely, governance, innovative teaching (pedagogy), skills acquisition, and school

environment which incorporates infrastructure and extra-curricular activities like sports and values. It is targeted at secondary school students [10].

Figure 2. Chinese business community with Obaseki (in blue suit), his wife (by his right) and some students for the EdoBEST programme [3].

With over 4 million people, Edo State faces variations in access to devices and connectivity needed for remote learning. Data from the Demographic and Health Survey indicates that while 46% of households possess a radio and 69% have a television, 91% have a mobile phone [3]. Recognising this, the Edo-BEST programme focuses on mobile phones as the main medium for remote learning. Approximately 29% of primary school students in Nigeria frequently accessed the Edo-BEST@Home remote learning solutions [10]. **Figure 2** shows Obaseki in a picture with some Chinese and recipients of the EdoBEST programme. The Edo-BEST 2.0 programme provides secondary school students with the opportunity to learn from downloadable resources available for free from an online repository. It encompasses various components, including interactive audio lessons, digital self-study activity packets, digital storybooks, mobile interactive quizzes, learning guides for parents, and virtual classrooms that facilitate interaction between teachers and students [3].

To ensure the effective utilisation of educational resources and promote meaningful learning, Edo-BEST 2.0 emphasises various key aspects. Firstly, it provides engaging programming that focuses on content aligned with the curriculum, ensuring active involvement of students in learning; secondly, constant support is offered to students by teachers and parents, who play a crucial role in facilitating and guiding their learning process; thirdly, formative assessment is incorporated through interactive quizzes, allowing students to test their understanding and receive immediate feedback; and lastly, ongoing support is provided to teachers through

virtual coaching, equipping them with the necessary skills and knowledge to deliver high-quality remote education [9].

Through incorporating these features, the EdoBEST 2.0 programme addresses the challenges posed by the out-of-school child population, threats to schooling, and the disruptions caused by the COVID-19 pandemic [9]. It leverages mobile technology to ensure widespread access to educational resources. It also promotes engagement, support, assessment, and professional development to enhance the remote learning experience for students and teachers in Edo State. In **Figure 3**, Obaseki is pictured with students and staff during the celebration of EdoBEST's 3rd anniversary.

Figure 3. Obaseki (centre) in a picture with some students and staff in the celebration of EdoBEST 3rd anniversary [10].

2.1. Conceptualizing the new media

New media can be defined as the integration of digital technologies with communication processes, resulting in a dynamic and interactive media landscape [4]. It encompasses the production, distribution, and consumption of content through digital platforms, allowing for real-time engagement, customisation, and user participation. New media breaks traditional barriers between media forms and encourages active involvement and collaboration among users. This definition reflects the transformative nature of new media, highlighting its ability to facilitate active participation among users.

New media includes the convergence of various media formats, including text, images, audio, and video, into a digital environment [11]. It allows for seamless integration and interaction between these formats, providing users with rich and immersive media experiences. New media enables content creators and consumers to leverage the power of digital technologies to communicate, express ideas, and engage with diverse audiences. The definition recognizes that modern media experiences often involve a combination of text, images, audio, and video elements. New media platforms and technologies facilitate the seamless integration and interaction of these

formats, enabling creators and consumers to leverage their strengths in communication [12]. This definition underscores the transformative potential of new media in providing rich and immersive experiences that go beyond the limitations of traditional media.

New media can also be considered as a cultural shift that emphasizes the democratisation of content creation and dissemination. It empowers individuals to produce and share their own media content through accessible digital tools and platforms, challenging traditional gatekeepers of information [13]. New media fosters a participatory culture that encourages collaboration, user-generated content, and the formation of online communities. The definition highlights how new media has led to a shift in media creation and distribution, enabling individuals to have more control over their content. The democratisation of media production and dissemination is made possible through readily available digital tools and platforms. This explanation also underscores the participatory nature of new media, with users actively contributing their content and engaging in collaborative efforts. It recognizes the formation of online communities that emerge around shared interests and values [13,14].

New media is characterized by its reliance on software algorithms and computational processes [7]. These algorithms play a crucial role in organising, curating, and delivering media content to users. New media leverages data-driven insights to personalize user experiences, recommend relevant content, and facilitate targeted advertising. This algorithmic nature of new media shapes user interactions and influences the production and consumption of media. This definition underscores the algorithmic nature of new media and how it shapes user interactions and influences the production and consumption of media content.

2.2. Secondary school education

Secondary school education, as defined by Merriam and Brockett [15], Fullan and Hargreaves [16] encompasses the educational experiences and opportunities provided to students during their adolescent years, typically between the ages of 12 and 18. It is a critical phase of education that bridges the gap between primary and higher education, preparing students for the challenges and demands of the 21st century. It has been highlighted that secondary schools should provide students with a broad and meaningful curriculum that caters to their diverse interests and learning needs [17]. This view recognizes the significance of tailoring educational experiences to individual students, promoting equity and inclusivity. Furthermore, Darling-Hammond [18] stresses the importance of effective teaching practices, supportive school environments, and strong community partnerships in fostering positive outcomes for secondary school students. This interpretation emphasizes the need for continuous improvement and innovation in secondary education.

Authors like Darling-Hammond [18] define secondary school education as a crucial period for the development of students' social and emotional competencies, including self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. This definition highlights the importance of addressing students' emotional well-being, fostering positive relationships, and providing a

supportive and nurturing environment. The authors argue that integrating SEL into secondary education can enhance students' academic achievement, reduce behavioural problems, and promote positive mental health outcomes. This interpretation underscores the holistic nature of secondary education and the significance of nurturing students' social and emotional growth.

Secondary school education as an arena where technology plays a crucial role in transforming teaching and learning practices. Darling-Hammond [18] further emphasize that technology integration goes beyond the mere use of digital tools and resources; it involves leveraging technology to enhance critical thinking, creativity, collaboration, and communication skills. This view underscores the potential of technology to create engaging and interactive learning environments, facilitate personalized learning experiences, and prepare students for the digital age [19]. It recognizes technology as an enabler of innovation and educational advancement within secondary education settings.

2.3. Impact of new media integration on teaching and learning in secondary education

The integration of new media in secondary education has had a significant impact on teaching and learning processes. Scholars such as Mesch and Talmud [20] argue that new media technologies have transformed the educational landscape by providing opportunities for interactive and engaging learning experiences. The widespread availability of digital tools and resources has expanded the range of teaching methods and instructional strategies that educators can employ. Traditional modes of instruction, which relied heavily on textbooks and lectures, have been supplemented or replaced by multimedia presentations, online resources, virtual simulations, and interactive learning platforms.

New media integration in secondary education has the potential to enhance student engagement and motivation [21]. Interactive multimedia elements, such as videos, animations, and gamified learning activities, can capture students' attention and make the learning experience more enjoyable. These technologies also facilitate active participation and hands-on learning, enabling students to construct their knowledge through exploration and experimentation. The role of cultural values in shaping learning experiences, particularly in the context of new media integration [22]. New media technologies can provide opportunities for diverse cultural perspectives to be incorporated into the curriculum, allowing students to explore different worldviews and broaden their understanding of global issues. By leveraging new media, educators can facilitate cross-cultural communication, promote cultural sensitivity, and foster a sense of inclusivity in the classroom.

The integration of new media in secondary education aligns with the principles of human learning [23]. New media technologies allow for personalized and self-directed learning experiences, catering to individual students' interests, learning styles, and paces. Adaptive learning platforms and intelligent tutoring systems can provide immediate feedback, track progress, and tailor instructional content to meet students' specific needs. This individualized approach promotes student autonomy, self-regulation, and lifelong learning skills. However, it is important to recognize that

effective integration of new media in secondary education requires competent and digitally literate teachers. The need for professional development programs that equip educators with the necessary knowledge and skills to leverage new media technologies effectively [24]. Teachers must be proficient in navigating digital platforms, critically evaluating online resources, and designing pedagogically sound learning experiences that leverage the affordances of new media.

2.4. Challenges and opportunities of implementing new media technologies in secondary school education

The implementation of new media technologies in secondary school education presents both challenges and opportunities for educators and students alike. One of the main challenges is the need for adequate infrastructure and resources [22]. Integrating new media technologies often requires a reliable internet connection, access to devices such as computers or tablets, and appropriate software or applications. Limited funding and technological disparities among schools can hinder the widespread adoption of new media tools and create inequalities in educational opportunities.

Another challenge in implementing new media technologies is the need for teacher training and professional development. Educators must be equipped with the necessary knowledge and skills [23]. This will enable them to effectively use new media tools in their teaching practices. This includes not only technical proficiency but also the ability to design pedagogically sound learning experiences that leverage the affordances of new media. Providing ongoing support and training for teachers is crucial to address this challenge and ensure successful integration. The use of new media technologies in secondary education poses concerns over online safety and digital citizenship. Students' internet usage should be accompanied by appropriate guidelines and policies to protect them from potential risks such as cyberbullying, online predators, or exposure to inappropriate content [24]. Educators and parents play a vital role in teaching students about responsible online behaviour, digital privacy, and critical evaluation of online information [25].

Despite these challenges, the implementation of new media technologies in secondary education also presents numerous opportunities. New media tools can facilitate communication and collaboration among students, enabling them to connect with peers, share ideas, and engage in meaningful discussions beyond the confines of the classroom [26]. Online platforms and social media can also provide opportunities for students to develop digital literacy skills, media literacy, and the ability to navigate and critically evaluate online information. Moreover, the integration of new media technologies can enhance the learning experience by making it more interactive and engaging. Multimedia elements, such as videos, animations, and simulations, can help students visualize complex concepts, reinforce understanding, and promote active learning [23]. Virtual or augmented reality technologies can create immersive learning environments, allowing students to explore virtual worlds and simulate real-world scenarios.

3. Theoretical context

Technological determinism theory (TDT)

Marshall McLuhan's Technological Determinism Theory (TDT) posits that technology plays a crucial role in shaping society, culture, and human behaviour. According to Hallström [27], McLuhan believed that technological advancements are not simply tools or instruments but rather powerful forces that shape and determine the social and cultural environment in which they are embedded. McLuhan argued that the medium itself, rather than its content, has a transformative impact on individuals and society as a whole. McLuhan's Technological Determinism Theory can be traced to his seminal work, "Understanding Media: The Extensions of Man", published in 1964. In this book, McLuhan explored the profound influence of media, particularly electronic media, on human perception, communication, and social structures. He introduced the famous phrase "the medium is the message", emphasising that the medium through which information is transmitted has a more significant impact on individuals and society than the content being conveyed.

Authors like Asemah [7] critically examined this notion in the context of technology education, arguing that while TDT highlights the influence of technology, it often overlooks the active role of educators and learners in shaping educational experiences. This perspective aligns with Ormond [28], who contend that focusing solely on technological determinism can lead to a deterministic view of media and education, neglecting the complexities of human agency within these systems. Therefore, while McLuhan's insights are foundational, they must be reconsidered to incorporate the dynamic interactions between technology and educational practice.

McLuhan suggested that different media technologies, such as print, radio, television, and the internet, have distinct characteristics that shape how people think, behave, and interact. McLuhan believed that each medium extends and amplifies certain human faculties while diminishing or obsolescing others [29]. For instance, the advent of print media brought about a shift from an oral and communal culture to a more individualistic and literate society. However, Asemah [7] argues that this shift does not inherently value one medium over another; instead, it reflects the changing contexts and practices of education. Additionally, Ormond [28] highlight the need to move beyond a simplistic view of technological impact, suggesting that the interplay between technology and journalism requires a nuanced understanding of how digital native media influences public discourse and societal norms. This critical lens challenges the deterministic view and calls for a more integrative approach that recognizes the active participation of individuals in shaping their technological environments [30].

Furthermore, McLuhan argued that technological advancements create a global village, eroding spatial and temporal barriers and fostering interconnectedness among individuals and cultures. McLuhan predicted the emergence of a "global theatre" facilitated by electronic media, where information and communication would be instantaneously accessible and disseminated, transcending geographical boundaries [30].

While McLuhan's Technological Determinism Theory has garnered both praise and criticism, it has had a profound impact on the fields of media studies and communication. His ideas continue to influence scholars and practitioners in understanding the effects of technology on human society and culture. McLuhan's theory encourages critical reflection on the role of technology in shaping our lives and

prompts discussions about the implications of technological determinism for education, politics, and social organisation. Applying McLuhan's Technological Determinism Theory to the study on the EdoBEST 2.0 programme involves analysing how the integration of new media technologies shapes secondary school education. The theory prompts us to consider the transformative impact of these technologies on teaching and learning processes, the influence of the medium itself on educational practices, and the potential for global interconnectedness. By critically examining the implications and challenges of implementing new media technologies, we can gain insights into rethinking secondary school education in the new media age.

4. Methodology

The study employed a mixed method (quantitative and qualitative approaches), combining surveys and key person interviews (KPIs) as research instruments and triangulating it with historical-analytic method. This choice was justified in order to gather comprehensive and in-depth data, enabling a nuanced understanding of the research topic. Survey was chosen as a research instrument due to its efficiency in collecting quantitative data from a larger sample size. Through distributing surveys to a representative sample of students and teachers from each school, the researchers gathered data on various aspects of the EdoBEST 2.0 programme's implementation, such as perceptions, usage patterns, and overall satisfaction.

Key person interview (KPI) was selected as the second research instrument to provide a deeper understanding of participants' experiences and perspectives. Through conducting interviews with a smaller sample size of teachers, the researchers explored individual narratives, elaborated survey responses, and gained insights into the broader implications of the EdoBEST 2.0 programme. The third was historical-analytic method, which allowed the researchers to historicize the issues and provide a context for a critical analysis and discussion. The mixed method approach allowed for triangulation, enhancing the validity and reliability of the study's findings.

The choice of three secondary schools as the population was aimed at providing a diverse representation of the educational context in the area under investigation. The schools are located in different areas within Benin City and have different infrastructural, cultural, and socio-economic characteristics that may influence the EdoBEST 2.0 programme's implementation and outcomes. Including multiple schools enabled the researchers to capture a broader range of perspectives and experiences, contributing to the generalizability and robustness of the study's findings. The population for the study consisted of three secondary schools in Benin City. The schools were selected to represent diverse contexts within the secondary education system, ensuring a range of perspectives and experiences. The population for the study consisted of Ogbe Boys Grammar School (OBFS), Idia College (IC), and Asoro Grammar School (AGS), with estimated populations of 2500, 2000, and 1500 students respectively, according to the Edo State Ministry of Education. As such, the total population of the study was six thousand (6000).

To determine the sample size, Taro Yamane's formula was used with a margin of error of 5%. The calculation resulted in a sample size of 375 given the formula:

$$n = \frac{N}{1+N(e)^2}.$$

where:

N = 6000 (population)

e = 0.05 (level of significance or margin of error)

Inputting the figures,

$$n = \frac{6000}{1+6000(0.05)^2},$$

$$n = \frac{6000}{1+6000(0.0025)},$$

$$n = \frac{6000}{1+15},$$

$$n = \frac{6000}{16},$$

$$n \approx 375.$$

Using a random sampling technique, 125 copies of the questionnaire were distributed to each of the three schools. Through careful monitoring, all copies of the questionnaire were retrieved and found usable. Additionally, one senior teacher from each secondary school was interviewed. This approach allowed for a comprehensive data collection process, incorporating both quantitative and qualitative data, and ensured the inclusion of multiple perspectives from the selected schools.

5. Data presentation

Table 1 reveals that the level of implementation varied across the three secondary schools: OBGS, IC, and AGS. OBGS had the highest percentage of full implementation, followed by IC and AGS. However, a considerable percentage of the respondents from all schools reported that what was proposed was not fully implemented. The finding suggests that there are challenges and discrepancies in executing the programme.

Table 1. Degree of implementation of the EdoBEST 2.0 programme in the integration of new media technologies in secondary school education.

Variable	OBGS	IC	AGS	TOTAL
It was fully implemented	40 (32%)	37 (29.6%)	31 (24.8%)	108 (28.8%)
What was proposed was not what was implemented	53 (42.4%)	49 (39.2%)	69 (55.2%)	171 (45.6%)
Very Low	32 (25.6%)	39 (31.2%)	25 (20%)	96 (25.6%)
Not implemented at all	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	125 (100%)	125 (100%)	125 (100%)	375 (100%)

Table 2 indicates both positive and negative outcomes of the EdoBEST 2.0 programme. On the positive side, the programme was reported to enhance teaching and learning, improve academic performance, and foster critical thinking skills in certain schools. However, there were also negative impacts, such as increased

academic workload and heightened pressure and stress on students and teachers. Additionally, some respondents indicated that the programme had no positive effect.

Table 2. Impact of the EdoBEST 2.0 programme on teaching and learning practices in secondary schools.

Variable	OBGS	IC	AGS	TOTAL
Enhanced teaching and learning	19 (15.2%)	15 (12%)	17 (12.6%)	51 (13.6%)
Improved academic performance	7 (5.6%)	15 (12%)	19 (15.2%)	41 (10.9%)
Enhanced critical thinking skills	20 (16%)	17 (13.6%)	11 (8.8%)	48 (12.8%)
Increased academic workload	24 (19.2%)	29 (23.2%)	26 (20.8%)	79 (21.1%)
Increased access to education resources via new media	17 (12.6%)	11 (8.8%)	10 (8%)	38 (10.1%)
Increased pressure and stress	28 (22.4%)	30 (24%)	35 (28%)	93 (24.8%)
No positive impact	10 (8%)	8 (6.4%)	7 (5.6%)	25 (6.7%)
Total	125 (100%)	125 (100%)	125 (100%)	375 (100%)

Table 3 suggests that limited access to technology, lack of digital literacy skills, inadequate parental involvement and peer support, resistance to change, poor internet connectivity and power supply, and poor implementation strategies are significant obstacles to the optimal use of EdoBEST 2.0 programme in secondary schools. The major challenge was, however, poor implementation strategies of the programme.

Table 3. Challenges of students and teachers in utilising the EdoBEST 2.0 programme in secondary schools.

Variable	OBGS	IC	AGS	TOTAL
Limited access to technology	9 (7.2%)	12 (9.6%)	10 (8%)	26 (6.3%)
Lack of digital literacy skills	13 (10.4%)	15 (12%)	19 (15.2%)	47 (12.5%)
Lack of parental involvement and peer support	17 (13.6%)	14 (11.2%)	11 (8.8%)	42 (11.2%)
Resistance to change	21 (19.2%)	29 (23.2%)	20 (16%)	70 (18.7%)
Poor internet connectivity and power supply	27 (16.8%)	33 (26.4%)	30 (24%)	90 (24%)
Poor implementation strategies	38 (30.4%)	22 (17.6%)	35 (28%)	95 (25.3%)
Others	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	125 (100%)	125 (100%)	125 (100%)	375 (100%)

5.1. Data from key person interviews (KPIs)

This subsection presents data based on the interview responses from key persons. The essence is to complement the quantitative data in the study by presenting qualitative data.

5.1.1. Research objective 1: Degree of implementation of the EdoBEST 2.0 programme in the integration of new media technologies in secondary school education

The respondents showed that there were mixed reactions to the degree of implementation of the EdoBEST 2.0 programme. According to respondent 1: “In our school, the implementation of the EdoBEST 2.0 programme has been quite successful. We have fully integrated new media technologies into our teaching practices, and students have responded positively using these tools. It has enhanced our ability to

deliver engaging lessons and facilitate interactive learning experiences. However, sustainability has been a major problem. It started well but it has not been going well".

Respondent 2 avowed: "Although the EdoBEST 2.0 programme was introduced to integrate new media technologies, the actual implementation in the schools in the locality has been very minute. It has not been fully implemented in terms of what the media is saying. In fact, both we the teachers and our students do not have the requisite technological devices necessary to carry out the programme".

Respondent 3: "The degree of implementation of the EdoBEST 2.0 program in our school has been mixed. While some teachers have embraced the use of new media technologies and incorporated them effectively in their lessons, others have faced difficulties adapting to these changes due to poor implementation by the government. There is a need for additional support and professional development to ensure consistent implementation across the school".

5.1.2. Research objective 2: Impact of the EdoBEST 2.0 programme on teaching and learning practices in secondary schools

The respondents noted that the EdoBEST 2.0 programme has had a significant impact on teaching and learning practices in secondary schools as some students' academic performances have improved. However, according to respondent 2, "while the EdoBEST 2.0 programme has brought some positive changes, such as enhanced access to educational resources, it has also increased the workload for both teachers and students. We have observed a rise in academic pressure and stress levels among students, which might affect their overall well-being and motivation".

Respondent 3 added: "The impact of the EdoBEST 2.0 program on teaching and learning practices in our school has been mixed. Some teachers have reported positive outcomes, such as increased student engagement and improved academic performance. However, others have not observed significant changes or have faced challenges due to limited resources and inadequate training".

5.1.3. Research objective 3: Challenges of students and teachers in utilising the EdoBEST 2.0 programme in secondary schools

Data from the interview showed that limited access to the technologies promised by the Edo State government and insufficient digital literacy skills among students and teachers have been significant barriers in utilising the EdoBEST 2.0 programme. Some students struggle to effectively use the provided devices and software, while some teachers face challenges in incorporating these technologies into their teaching methods.

Respondent 2 also added that many of the teachers have not had any access to the promised technological devices by the state government as widely publicized in the media and that resistance to change has been a significant barrier in secondary schools as some teachers have been hesitant to adopt new media technologies and prefer traditional teaching methods. Additionally, poor internet connectivity and power supply have hampered the seamless integration of the program, causing disruptions during lessons.

6. Discussion of findings

Table 1 provides insights into the degree of implementation of the EdoBEST 2.0 programme, indicating variations across schools. The interview data further enriches this understanding by shedding light on the underlying factors influencing these implementation disparities. For instance, respondent 1 reports the successful implementation of the EdoBEST 2.0 programme, attributing it to effective training and support systems. This aligns with Merriam and Brockett [15] and Fullan and Hargreaves [16] assertion that successful educational reform necessitates comprehensive implementation strategies. In contrast, respondent 2 highlights limited implementation due to inadequate resources and training as well as technological devices for the programme as promised by the state government, emphasising the need for targeted interventions. This is perhaps why Arruda and Kerres [31] argue that teachers' techno-pedagogical competencies significantly influence their attitudes toward teaching, which can directly impact implementation success. This suggests that beyond resource allocation, fostering positive attitudes and competencies among educators is crucial for the effective integration of educational programs like EdoBEST 2.0. Without addressing these deeper attitudinal factors, even well-resourced initiatives may falter. This reflects Technological Determinism Theory, which posits that the tools and technologies available shape educational practices and outcomes, emphasizing the necessity of aligning teacher competencies with technological advancements.

Furthermore, the mixed implementation reported by respondent 3 suggests that additional support and professional development are necessary to ensure consistent integration across schools as there are varied level of implementation of the programme. These findings underscore the significance of addressing the challenges associated with implementation, such as resource allocation, training, and administrative support, to maximize the potential of the EdoBEST 2.0 programme. The findings align with Fullan and Hargreaves [17] assertion that successful educational reform requires effective implementation strategies and support systems. The research conducted in Germany by Munoz [9] indicates that teachers also recognize the importance of digital technologies in education, yet, face challenges similar to those identified in the EdoBEST 2.0 programme, such as inadequate resources and support, echoing concerns raised by the respondents in your study. This situation illustrates Technological Determinism Theory by highlighting how the lack of adequate technological support can hinder the educational reform process, demonstrating that technology's impact is contingent on the surrounding educational environment and resources.

Moving to **Table 2**, it becomes evident that the EdoBEST 2.0 programme has both positive and negative impacts on teaching and learning practices. Positive outcomes include enhanced teaching and learning experiences, improved academic performance, and the development of critical thinking skills. The interview data provides deeper insights into these effects. Respondent 1's experience showcases positive outcomes, including enhanced teaching and learning experiences, improved academic performance, and the development of critical thinking skills. This aligns with Darling-Hammond [18] emphasis on the value of engaging pedagogical practices

and personalized learning in secondary education reform. However, respondent 2 raises concerns about increased academic workload and heightened pressure and stress among students and teachers. This highlights the need for a balanced approach, one that maximizes the benefits of new media technologies while mitigating potential challenges.

Research such as Riordan and Yeager [19] underscores the significance of addressing social-emotional factors in secondary school education, indicating the importance of considering the holistic impact of the EdoBEST 2.0 programme on teaching and learning. Similarly, Arruda and Kerres [31] highlight that while digital tools can enhance learning experiences among elementary students, the pervasive cultural values associated with technology can lead to distractions and superficial engagement. The findings from Arruda and Kerres [31] in the German context suggest that while digital technologies can enhance educational practices, they also create pressures on teachers and students, indicating a need for thoughtful integration that considers both technological and emotional dimensions of learning. These dynamics resonate with Technological Determinism Theory, illustrating how the characteristics of digital tools and their integration into the educational framework can profoundly influence teaching methodologies and learning outcomes.

Table 3 identifies several challenges or barriers to the utilisation of the EdoBEST 2.0 programme, and the interview data provides additional insights into these challenges. Limited access to technology and lack of digital literacy skills emerges as significant hurdles, as reported by respondent 1. This finding resonates with Swan and Shih [14] research, emphasising the need to address technological access and digital skills for successful integration of technology in education. Additionally, Respondent 2's observation of resistance to change among teachers and issues with infrastructure further underscores the importance of overcoming these barriers. The lack of parental involvement and peer support, as highlighted by respondent 3, also presents a challenge. Overcoming these barriers requires comprehensive support systems, including professional development opportunities, access to resources, and collaboration among stakeholders. Without addressing such barriers holistically—particularly the need for digital literacy training—successful implementation remains elusive. This critique highlights the necessity for not just infrastructural improvements but also cultural shifts within educational institutions to embrace the changes that initiatives like EdoBEST 2.0 aim to achieve.

7. Conclusion and recommendations

The findings from this study shed light on the implementation, impact, and barriers associated with the EdoBEST 2.0 programme in secondary schools in Edo State, Nigeria. While the programme holds promise for transforming teaching and learning practices, some challenges need to be addressed. We, therefore, conclude that the EdoBEST 2.0 programme has not been able to optimally enhance secondary school education via the new media because the purported and widely publicized new media gadgets disbursed by the Edo State government to secondary school students and teachers, are to a large extent, merely hypothetical as the students and teachers have limited access to these gadgets. While the programme has had some positive impact

on both students and teachers, its implementation has been poor and continues to retrogress as the day goes by.

There is the necessity of a multi-faceted approach to educational reform that emphasizes not only the provision of technological resources but an inclusive and functional educational experience, supported by infrastructural and pedagogical improvements. Effective training for educators, robust infrastructure, and ongoing support systems are critical for ensuring that digital tools are effectively integrated into the curriculum. Our findings suggest that without addressing these foundational issues, initiatives like the EdoBEST 2.0 programme may fail to realize their intended outcomes, ultimately hindering the potential for meaningful educational transformation. Therefore, future efforts should focus on creating a cohesive strategy that not only enhances access to technology but also fosters an environment conducive to innovative teaching and learning practices.

The researchers, therefore, recommend that: The EdoBEST 2.0 programme should be revamped and all factors hindering the achievement of its set goals be worked upon for positive impacts in secondary schools in Edo State. The federal and state governments should review the academic syllabi to factor in the compulsory utilisation of new media technologies in teaching and learning and discard old-fashioned traditional teaching and learning methods such as the use of chalk and blackboard and the use of lesson notebooks without any digital backup. While the EdoBEST 2.0 programme has shown positive impact on teaching and learning practices, it is essential to address the potential negative consequences, such as increased workload and academic pressure. There should be the development of guidelines or frameworks that help educators strike a balance between leveraging the benefits of new media technologies and ensuring the well-being of students and teachers. This includes providing resources and strategies to promote social-emotional well-being.

The limitations of this study include the rather narrow focus on specific schools within Edo State, which may not fully represent the broader educational landscape in Nigeria. Future research could explore comparative studies across different states or regions to gain a more comprehensive understanding of the factors affecting the implementation of technology in education. Additionally, longitudinal studies could provide insights into the long-term effects of the EdoBEST 2.0 programme on student outcomes and teacher practices.

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