Assessment of Teacher Educators' Perception on Hybrid Learning in a Digitalized Classroom for Sustainable Development in Curriculum Delivery in Nigeria

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ABSTRACT

Hybrid learning, a blend of traditional face-to-face instruction and online learning, has gained significant attention, especially in response to the COVID-19 pandemic. This study investigates the perceptions of teacher educators in Nigeria towards hybrid learning, its impact on curriculum delivery, and the associated challenges. Understanding these perceptions is crucial for informing educational policy and practice, ensuring effective implementation, and promoting sustainable development in education. A mixed-method approach was employed, combining quantitative and qualitative data collection methods. A structured questionnaire was distributed to 23 teacher educators across various regions in Nigeria, capturing demographic information, perceptions of hybrid learning, its impact on curriculum delivery, and the challenges faced. The quantitative data were analyzed using descriptive statistics, while thematic analysis was applied to the qualitative responses to identify recurring themes and patterns. The study revealed a generally positive attitude towards hybrid learning, with 69.6% of respondents having implemented it in their teaching. A majority of educators (59.1%) rated their overall experience as positive or very positive, highlighting improvements in curriculum delivery through enhanced engagement, flexibility, and personalized learning. However, significant challenges were identified, including a lack of technological resources (76.2%), insufficient training and professional development (52.4%), and technical difficulties (52.4%). These barriers underscore the need for better support systems and infrastructure to facilitate effective hybrid learning. The findings suggest that while hybrid learning has considerable potential to improve educational practices, addressing technological and training challenges is essential for its success. Policymakers and educational leaders should focus on enhancing infrastructure, providing comprehensive professional development, and ensuring equitable access to technology.

Keywords: Hybrid Learning, Curriculum Delivery, Teacher Educators, Educational Technology, Professional Development

INTRODUCTION

Hybrid learning, also known as blended learning, combines traditional face-to-face instruction with online learning experiences. This educational approach leverages the strengths of both methods, providing flexibility and accessibility for students and educators alike. Digitalized classrooms, equipped with advanced technologies such as interactive whiteboards, learning management systems (LMS), and various digital tools, facilitate this hybrid model by creating an interactive and engaging learning environment. The integration of

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technology in education has revolutionized teaching and learning processes, enabling personalized learning experiences and promoting active participation among students [1][2]. The transition to hybrid learning has been accelerated by the COVID-19 pandemic, which forced educational institutions worldwide to adopt online and blended learning modalities to ensure continuity of education. This shift has highlighted the potential of hybrid learning to cater to diverse learning needs and preferences, making education more inclusive and equitable [2]. The flexibility offered by hybrid learning allows students to access educational resources and participate in learning activities at their own pace and convenience, thereby enhancing their overall learning experience. Sustainable development in education refers to the integration of principles, values, and practices that promote the well-being of individuals and society as a whole, while ensuring the preservation of the environment for future generations. In the context of curriculum delivery, sustainable development involves adopting teaching and learning strategies that are environmentally friendly, socially responsible, and economically viable. This includes the use of digital tools and resources that reduce the need for physical materials, promoting energy efficiency and reducing the carbon footprint of educational institutions [3]. Moreover, sustainable development in curriculum delivery emphasizes the importance of preparing students to become responsible global citizens who are aware of and can address the complex challenges facing the world today. This involves incorporating topics such as climate change, social justice, and ethical decision-making into the curriculum, and fostering critical thinking and problem-solving skills among students [4]. Nigeria, as the most populous country in Africa, faces significant challenges in its education sector, including inadequate infrastructure, limited access to quality education, and a shortage of qualified teachers. Despite these challenges, the Nigerian government has made considerable efforts to improve the education system, with initiatives aimed at increasing access to education, enhancing teacher training, and integrating technology into the classroom [5]. However, the adoption of hybrid learning and digitalized classrooms is still in its nascent stages, with many schools lacking the necessary infrastructure and resources to fully implement these approaches. The COVID-19 pandemic has further exacerbated these challenges, disrupting traditional classroom-based instruction and highlighting the urgent need for alternative modes of education delivery. In response, many Nigerian schools have begun to explore hybrid learning models, utilizing digital tools and online platforms to complement face-to-face instruction [6]. This shift has brought to the forefront the perceptions and attitudes of teacher educators towards hybrid learning and digitalized classrooms, as their acceptance and effective use of these technologies are crucial for the successful implementation of hybrid learning in Nigeria. Understanding teacher educators' perceptions of hybrid learning is essential for informing policy decisions and designing professional development programs that address their needs and concerns. Positive perceptions and attitudes towards hybrid learning can facilitate its adoption and integration into the curriculum, while negative perceptions can hinder its effectiveness and sustainability [7][8]. Therefore, investigating the perceptions of teacher educators in Nigeria is a critical step towards ensuring the successful implementation of hybrid learning and promoting sustainable development in curriculum delivery.

Problem Statement

Despite the growing interest in hybrid learning, its implementation in Nigerian education faces significant challenges. Teacher educators, who play a critical role in adopting and integrating these models, often encounter barriers such as inadequate technological infrastructure, insufficient training, and resistance to change. These issues hinder the effective delivery of a sustainable and flexible curriculum. Furthermore, there is limited research on the perceptions of Nigerian teacher educators towards hybrid learning and its impact on curriculum delivery. Understanding these perceptions is essential for developing strategies that address these challenges and enhance the adoption of hybrid learning. This study aims to investigate the attitudes and beliefs of teacher educators towards hybrid learning, assess its impact on curriculum delivery, and identify the challenges and opportunities for promoting sustainable development in education. By addressing these gaps, the study seeks to inform policy and practice, ultimately improving the quality and effectiveness of education in Nigeria.

Objectives of the Study

i. Investigate Teacher Educators' Perceptions of Hybrid LearningThis objective aims to explore the attitudes, beliefs, and levels of familiarity that teacher educators in Nigeria have towards hybrid learning

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models, providing insight into their readiness and acceptance of integrating digital technologies into the classroom

ii. Assess the Impact of Digitalized Classrooms on Curriculum DeliveryThis objective seeks to evaluate how the implementation of digital tools and hybrid learning methods affects the effectiveness, flexibility, and quality of curriculum delivery, highlighting both improvements and challenges experienced by educators.

iii. Identify Challenges and Opportunities in Implementing Hybrid LearningThis objective focuses on identifying the specific barriers, such as technological limitations and training needs, that educators face when adopting hybrid learning, as well as the potential benefits and opportunities it offers for enhancing educational practices.

Research Questions

This study seeks to address the following research questions:

i. What are the perceptions of teacher educators towards hybrid learning in digitalized classrooms in Nigeria?

ii. How does hybrid learning impact the sustainability and effectiveness of curriculum delivery in Nigerian education?

iii. What challenges and opportunities do teacher educators face in implementing hybrid learning for sustainable development in curriculum delivery?

Significance of the Study

The study is significant as it sheds light on the readiness and adaptability of educators towards modern teaching methods. By understanding their perceptions, the study helps identify the gaps in technological infrastructure, training, and support needed to implement hybrid learning effectively. This research informs policymakers and educational leaders, guiding the development of strategies that promote sustainable development in education. Ultimately, the findings aim to enhance curriculum delivery, making it more flexible, inclusive, and resilient.

LITERATURE REVIEW

Hybrid learning, combining online and face-to-face instruction, has become a focal point in educational research. [1] highlight the flexibility and enhanced engagement it offers, arguing that hybrid models can address diverse student needs more effectively than traditional methods. Similarly, [2] emphasizes hybrid learning's role in maintaining educational continuity during disruptions like the COVID-19 pandemic, showcasing its adaptability and resilience.

[9] discuss the transformative potential of hybrid learning in higher education, asserting that it promotes critical thinking and deeper learning. They highlight the importance of integrating technology to create interactive and collaborative learning environments. [10] echo these sentiments, noting that hybrid learning can facilitate personalized learning experiences, allowing students to learn at their own pace and according to their own needs.

However, challenges persist. [7] identify significant barriers such as insufficient technological infrastructure and inadequate professional development for educators. They argue that without addressing these issues, the potential benefits of hybrid learning cannot be fully realized. [11] suggest that successful implementation requires robust support systems and continuous training for educators to effectively integrate hybrid methods.

Despite these challenges, the literature generally supports the positive impact of hybrid learning on educational outcomes. Studies consistently show improved student engagement, satisfaction, and learning outcomes in

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hybrid settings compared to traditional methods. This study aims to build on this body of work by exploring the specific perceptions and experiences of teacher educators in Nigeria, contributing to the global understanding of hybrid learning's benefits and challenges.

Theoretical Framework

This study is grounded in several educational theories that provide a foundation for understanding the adoption and implementation of hybrid learning. Constructivism posits that learners construct knowledge through experiences and interactions with their environment. Hybrid learning aligns with constructivist principles by enabling students to engage with both digital and face-to-face instructional methods, fostering active learning and deeper understanding [12].Connectivism, introduced by [13], emphasizes the role of social and technological networks in learning. This theory is particularly relevant to hybrid learning, where digital tools and online platforms facilitate connections between learners, educators, and resources, enabling collaborative learning and knowledge sharing.Both theories highlight the importance of learner-centered approaches and the integration of technology to enhance educational outcomes. Understanding these theoretical frameworks aids in comprehending how hybrid learning can be effectively implemented to support sustainable curriculum delivery.

Hybrid Learning in Global Context

Hybrid learning has been adopted worldwide, with various countries demonstrating its effectiveness through diverse case studies. In the United States, the University of Central Florida's blended learning model has significantly improved student engagement and performance [14]. In Finland, hybrid learning initiatives have enhanced educational equity by providing flexible learning opportunities for students in remote areas [15]. These examples illustrate the global potential of hybrid learning to improve educational outcomes.

Digitalized Classrooms

Technological advancements have revolutionized classrooms, transforming traditional education into dynamic, interactive learning environments. Tools like interactive whiteboards, learning management systems (LMS), and educational software enhance teaching and learning by providing diverse resources and facilitating real-time collaboration. Applications such as virtual reality (VR) and augmented reality (AR) offer immersive experiences that deepen understanding of complex concepts [16]. These innovations enable personalized learning, fostering greater student engagement and improving educational outcomes.

Sustainable Development in Education

Sustainable development in education refers to integrating principles that promote environmental stewardship, social equity, and economic viability into the curriculum. It emphasizes preparing students to address global challenges such as climate change, social justice, and economic disparities. Key principles include promoting critical thinking, fostering interdisciplinary learning, and encouraging active participation in sustainable practices [4]. This approach ensures that education contributes to the well-being of individuals and communities, while preserving resources for future generations.

Teacher Educators' Perceptions

Previous studies reveal varied attitudes among educators towards hybrid learning. Some educators appreciate the flexibility and enhanced student engagement offered by hybrid models, while others express concerns about technological challenges and the need for professional development [7]. Understanding these perceptions is crucial for effectively implementing hybrid learning strategies in education.

Challenges and Opportunities

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Teacher educators encounter several challenges in adopting hybrid learning, including inadequate infrastructure, limited access to reliable internet and digital devices, and a lack of technical support and training. Resistance to change and a lack of confidence in using technology also pose significant barriers [6].

Hybrid learning presents opportunities to enhance curriculum delivery by providing flexible learning options, fostering greater student engagement, and enabling personalized learning experiences. It also allows for the integration of innovative teaching methods and digital resources, which can improve educational outcomes and support sustainable development in education [1].

RESEARCH METHODOLOGY

This study employs a mixed-method approach, integrating both quantitative and qualitative data collection methods to gain a comprehensive understanding of teacher educators' perceptions of hybrid learning. A structured questionnaire was designed and distributed using Google Forms to capture demographic information, perceptions of hybrid learning, its impact on curriculum delivery, and the challenges faced by educators. The target population comprises teacher educators from secondary, and tertiary institutions across eastern regions in Nigeria. A stratified random sampling technique was employed to ensure representation across different educational levels and geographic locations. Quantitative data were analyzed using descriptive statistics to identify patterns and trends, while qualitative responses underwent thematic analysis to extract recurring themes and insights. This combined approach allows for a robust analysis of the data, providing a nuanced understanding of the factors influencing the adoption and effectiveness of hybrid learning in Nigerian education.

Population and Sample

The study population consists of teacher educators in Nigeria, including those from primary, secondary, and tertiary institutions. A stratified random sampling technique was used to ensure representation across different regions and educational levels. The sample size was determined using standard statistical methods, resulting in a selection of 23 teacher educators to participate in the survey.

Justification of Data Collected

The data collected on gender and age were essential for understanding the diverse perspectives of teacher educators on hybrid learning. Gender distribution (56.5% female, 43.5% male) ensures representation of different experiences and attitudes towards technology adoption. Age data, spanning various brackets, captures insights from both seasoned and newer educators, reflecting generational differences in technology use and pedagogical approaches. These demographic variables are crucial for identifying specific needs and challenges within different educator groups, allowing for targeted support and more effective implementation of hybrid learning strategies tailored to diverse educator profiles.

RESULTS

Thematic Analysis

Qualitative data from open-ended questions were analyzed using thematic analysis. This method involved coding the responses to identify recurring themes and patterns related to the challenges and benefits of hybrid learning. Thematic analysis provided deeper insights into the personal experiences and attitudes of teacher educators. The process included familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report.

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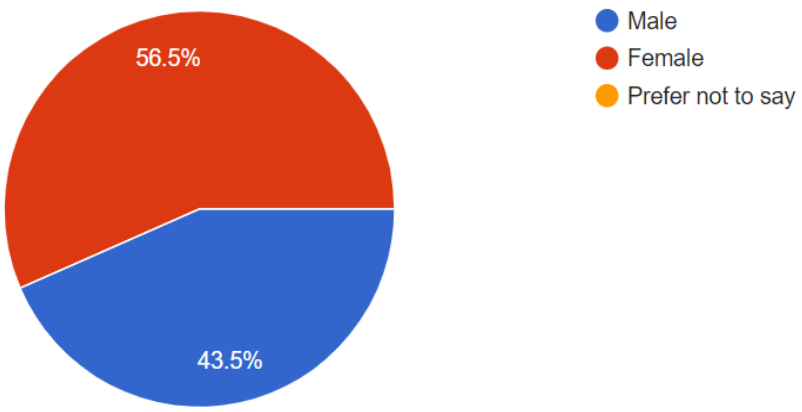

Figure 1 Gender Distribution

Male: 43.5%

Female: 56.5%

Prefer not to say: Not represented in the chart, implying no respondents selected this option.

This distribution indicates a slightly higher participation rate among female respondents compared to male respondents. The absence of the "Prefer not to say" category suggests that all respondents identified as either male or female. This gender distribution can provide insights into the representation of different genders in the context of the study and may help in understanding the diverse perspectives and experiences related to hybrid learning among teacher educators.

Implications for the Study

Gender Representation:

With a higher percentage of female respondents, the findings may reflect more on the experiences and perceptions of female teacher educators.

It's important to consider this distribution when generalizing the results to the broader population of teacher educators in Nigeria.

Potential Biases

The gender distribution may influence the reported challenges and benefits of hybrid learning, as different genders may face unique issues or have varying levels of comfort with technology.

To analyze the educational qualifications represented in the provided pie chart, we will focus on the distribution of respondents' highest educational qualifications. Here's a detailed breakdown:

Educational Qualifications Distribution

Bachelor's Degree: 17.4%

Master's Degree: 34.8%

Doctorate (PhD): 47.8%

Others: Not represented in the chart, implying no respondents selected this option.

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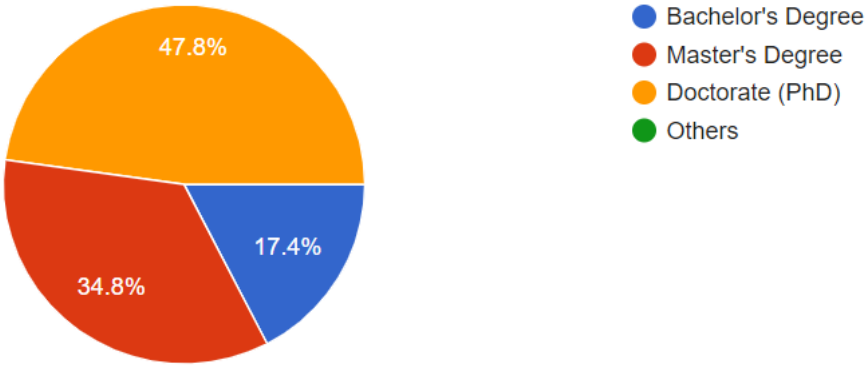

Figure 2 Educational qualification

Insights and Implications

High Qualification Levels:

A significant majority of respondents hold advanced degrees, with nearly half having a Doctorate (47.8%) and over a third having a Master's degree (34.8%).

This high level of qualification among respondents suggests that the teacher educators involved in the study are well-educated and likely experienced in their fields.

Low Representation of Bachelor's Degree

Only 17.4% of respondents have a Bachelor's degree, indicating that fewer educators with only undergraduate qualifications are represented in the study.

This may reflect a trend towards higher qualifications among teacher educators in Nigeria.

Absence of 'Others' Category:

The lack of responses in the 'Others' category implies that all participants have formal educational degrees, and no alternative qualifications were reported

Advanced Perspectives

The advanced educational qualifications of the respondents may influence their perceptions and attitudes towards hybrid learning, possibly reflecting a higher level familiarity and comfort with academic and technological advancements.

Curriculum Delivery

Teacher educators with advanced degrees may have more insights into effective curriculum delivery strategies, which can provide valuable information for understanding the impact of hybrid learning.

Professional Development

The data suggests a need for continuous professional development, especially for educators with Bachelor's degrees, to ensure they are equally equipped to handle the demands of hybrid learning environments.

Comparative Analysis

Comparing the perceptions of hybrid learning across different educational qualification levels could provide deeper insights into how qualifications impact attitudes and experiences.

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Targeted Support:Institutions may consider offering targeted support and training programs based on the educational qualifications of their staff to address specific needs and enhance overall effectiveness in hybrid learning implementation.

By analyzing the educational qualifications of the respondents, we can better understand the demographic context and how it may influence the study's findings and implications for hybrid learning adoption and implementation.

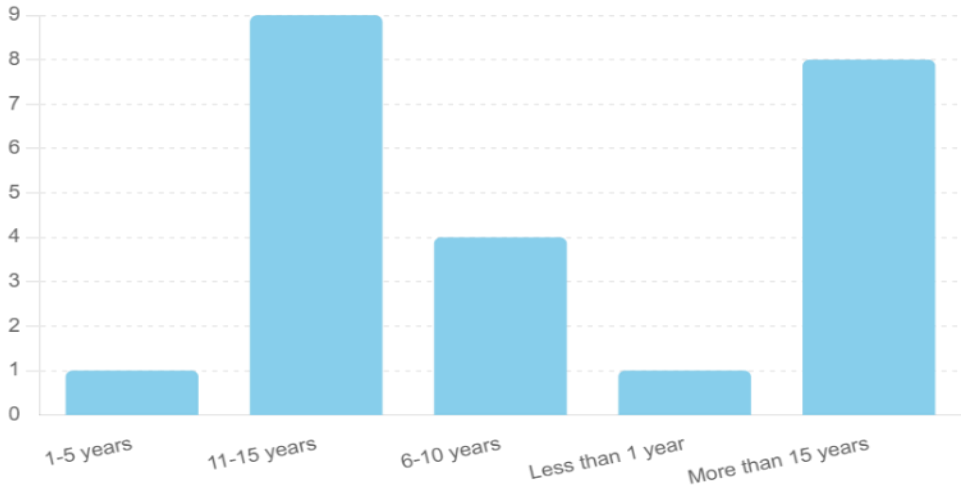

Figure 3 Familiarity with Hybrid Learning

Very Familiar

The majority of respondents are very familiar with the concept of hybrid learning, as indicated by the highest bar.

Somewhat Familiar:

A significant number of respondents are somewhat familiar with hybrid learning.

Neutral:

A few respondents indicated a neutral familiarity with hybrid learning.

Somewhat Unfamiliar:

A small number of respondents are somewhat unfamiliar with hybrid learning.

Very Unfamiliar:

Very few respondents are very unfamiliar with hybrid learning.

Insights and Implications

High Familiarity:

The high number of respondents who are very familiar with hybrid learning suggests that most teacher educators have a good understanding of this teaching model.

This high familiarity could be due to recent pushes towards integrating technology in education, especially during the COVID-19 pandemic.

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Areas for Improvement

The presence of respondents who are somewhat unfamiliar or very unfamiliar indicates that there are still gaps in knowledge and experience with hybrid learning.

Institutions may need to provide additional training and resources to ensure all educators are well-versed in hybrid learning methodologies.

Professional Development Needs

For those who are somewhat familiar or neutral, targeted professional development programs can enhance their familiarity and effectiveness in implementing hybrid learning strategies.

Tailored Support:

Understanding the varying levels of familiarity can help educational institutions tailor their support and training programs to meet the specific needs of their educators.

The data indicates a generally high level of familiarity with hybrid learning among the respondents, with most being very familiar. However, there are still some educators who need more support and training to become comfortable with this teaching model. By addressing these gaps, institutions can ensure more effective and widespread implementation of hybrid learning.

Strategies to Improve Hybrid Learning

Provide Comprehensive Professional Development

Targeted Training Programs: Develop and implement ongoing professional development programs tailored to educators' varying levels of familiarity with hybrid learning.

Workshops and Seminars: Conduct regular workshops and seminars on best practices, emerging technologies, and innovative teaching methods in hybrid learning.

Peer Collaboration: Encourage peer-to-peer learning and collaboration through mentorship programs, where experienced educators can guide those less familiar with hybrid learning.

Enhance Technological Infrastructure

Reliable Internet Access: Ensure all educational institutions have access to high-speed, reliable internet connectivity.

Updated Equipment: Provide up-to-date technological tools and equipment, such as interactive whiteboards, tablets, and laptops, to support hybrid learning environments.

Technical Support: Establish robust technical support teams to assist educators with troubleshooting and resolving technical issues promptly.

Develop Engaging and Interactive Content

Multimedia Resources: Utilize multimedia resources such as videos, animations, and interactive simulations to make learning more engaging and interactive.

Learning Management Systems (LMS): Implement and effectively use LMS platforms to organize content, track student progress, and facilitate communication between educators and students.

Gamification: Incorporate gamification elements like quizzes, badges, and leaderboards to motivate and engage students.

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Foster a Collaborative Learning Environment

Discussion Forums: Create online discussion forums and social media groups to encourage collaboration and interaction among students and between students and educators.

Group Projects: Design group projects and activities that require students to work together, both in-person and online, fostering teamwork and collaboration skills.

Feedback Mechanisms: Implement regular feedback mechanisms, such as surveys and focus groups, to gather input from students and educators on their hybrid learning experiences.

Personalize Learning Experiences

Adaptive Learning Technologies: Use adaptive learning technologies that tailor educational content to individual student needs and learning paces.

Flexible Scheduling: Offer flexible scheduling options to accommodate different learning styles and personal commitments of students.

Individualized Support: Provide individualized support and tutoring for students who may need additional help or resources.

Ensure Equity and Accessibility

Digital Divide: Address the digital divide by providing necessary resources and support to students from disadvantaged backgrounds to ensure they have equal access to hybrid learning opportunities.

Inclusive Design: Design hybrid learning materials and activities that are inclusive and accessible to all students, including those with disabilities.

Scholarships and Grants: Offer scholarships, grants, or subsidies for purchasing necessary technology and internet services for students in need.

Continuously Monitor and Evaluate

Data Analytics: Use data analytics to monitor student performance and engagement, identifying areas where students may be struggling and adjusting teaching methods accordingly.

Regular Assessments: Conduct regular assessments of both students and the hybrid learning program itself to ensure continuous improvement.

Feedback Loops: Establish feedback loops where educators can regularly share their experiences and suggestions for improvement with administrators and policymakers.

Improving hybrid learning requires a multifaceted approach that includes providing comprehensive professional development, enhancing technological infrastructure, developing engaging content, fostering a collaborative environment, personalizing learning experiences, ensuring equity and accessibility, and continuously monitoring and evaluating the program. By addressing these areas, educational institutions can create effective, inclusive, and sustainable hybrid learning environments that benefit both educators and students.

Overall Experience with Hybrid Learning

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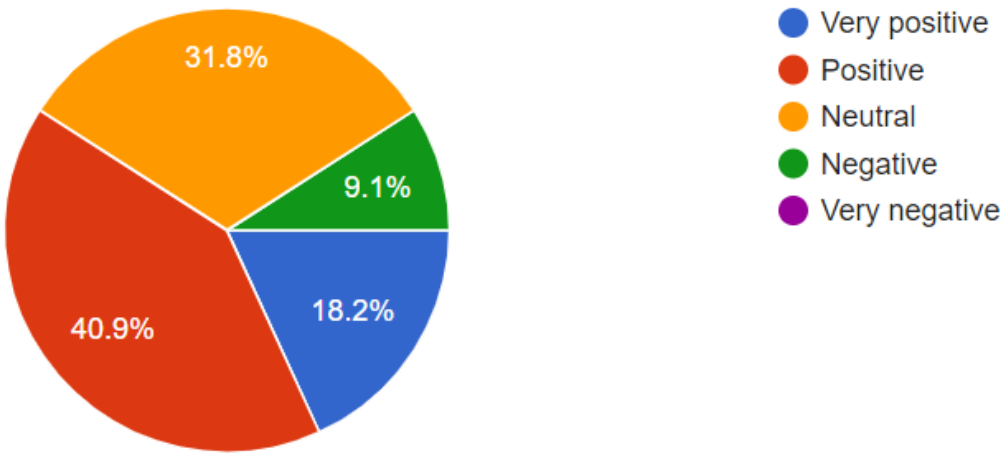

Figure 4 Overall Experience with Hybrid Learning

Very Positive: 18.2%

Positive: 40.9%

Neutral: 31.8%

Negative: 9.1%

Very Negative: 0%

The majority of respondents rate their overall hybrid learning experience as positive (40.9%) or very positive (18.2%). A significant portion is neutral (31.8%), while a small percentage (9.1%) had a negative experience. There were no very negative ratings.

Challenges in Implementing Hybrid Learning

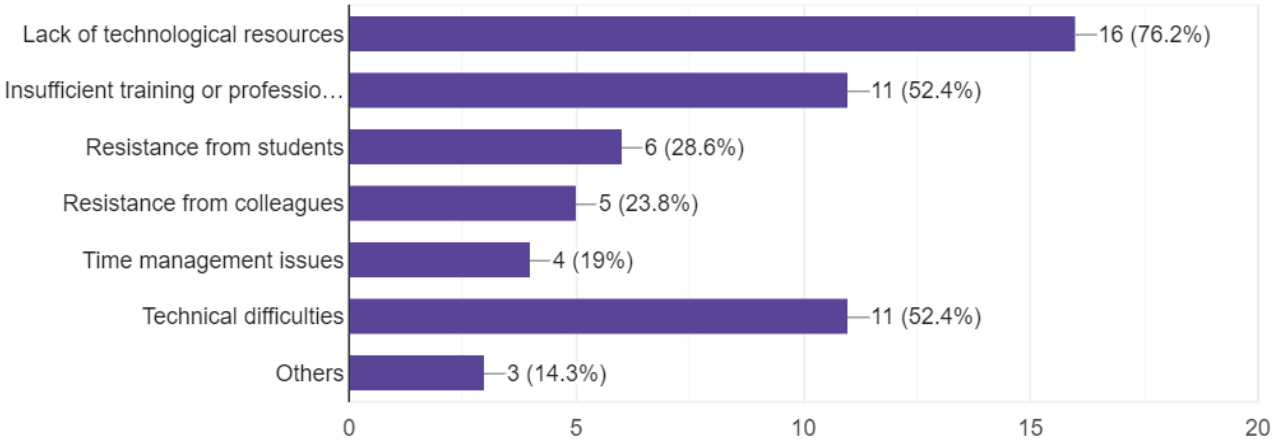

Figure 5 Educators in implementing hybrid learning

The main challenges encountered by educators in implementing hybrid learning are:

Lack of technological resources (76.2%)

Insufficient training or professional development (52.4%)

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Technical difficulties (52.4%)

Resistance from students (28.6%)

Resistance from colleagues (23.8%)

Time management issues (19%)

Others (14.3%)

The most significant barriers are the lack of technological resources and insufficient training, both impacting over half of the respondents. Addressing these issues is crucial for successful hybrid learning implementation.

Future Perspectives

How likely are you to continue using hybrid learning methods in the future?

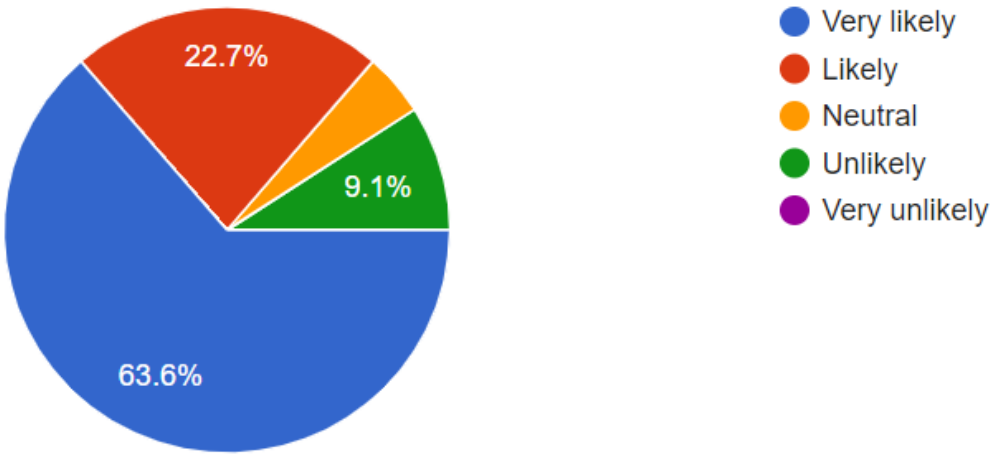

Figure 6 Those likely to use hybrid learning methods in the future

The majority of respondents (81%) reported that hybrid learning has either significantly or somewhat improved their approach to curriculum delivery. A smaller portion (19%) noted no change, and no respondents indicated that hybrid learning worsened their approach. This suggests a generally positive impact of hybrid learning on curriculum delivery among the surveyed educators

FINDINGS

Demographic Characteristics of Respondents

The study surveyed teacher educators with diverse demographic characteristics. In terms of gender, 56.5% were female, and 43.5% were male. The age distribution included educators primarily in the 35-44 and 45-54 age brackets. Regarding teaching experience, the majority had 11-15 years or more than 15 years of experience, indicating a highly experienced cohort. For educational background, 47.8% held a Doctorate (PhD), 34.8% had a Master's degree, and 17.4% possessed a Bachelor's degree. This diverse demographic profile provides a comprehensive view of the perceptions and experiences of teacher educators in hybrid learning.

A.Perceptions of Hybrid Learning

The respondents generally exhibited a positive attitude towards hybrid learning. A significant majority (69.6%) have implemented hybrid learning in their teaching, reflecting a broad acceptance and recognition of its benefits. Among these educators, 40.9% rated their overall experience as positive, with an additional 18.2%

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rating it as very positive. This suggests that most educators find hybrid learning to be an effective teaching model that enhances student engagement and learning outcomes.

B. Specific Areas of Satisfaction and Concern

Satisfaction:

Improved Curriculum Delivery: Over half of the respondents (52.4%) indicated that hybrid learning significantly improved their approach to curriculum delivery, while 28.6% reported it somewhat improved their methods. This highlights the effectiveness of hybrid learning in facilitating better educational practices.

Familiarity with Hybrid Learning: The majority of educators (approximately 17) reported being very or somewhat familiar with hybrid learning concepts, indicating a strong foundation of knowledge and comfort with this teaching model.

Concerns:

Technological Resources: The most significant concern reported by 76.2% of respondents was the lack of technological resources. This includes inadequate access to necessary devices and reliable internet, which hinders the effective implementation of hybrid learning.

Training and Professional Development: Half of the respondents (52.4%) highlighted insufficient training or professional development as a critical issue. This suggests a need for more comprehensive support and continuous learning opportunities to equip educators with the skills required for hybrid learning.

Technical Difficulties: Another prominent concern, reported by 52.4% of respondents, was the prevalence of technical difficulties during hybrid learning sessions. This underscores the need for robust technical support and infrastructure to ensure smooth and uninterrupted learning experiences.

Overall, while there is a positive perception of hybrid learning among educators, addressing the concerns related to resources, training, and technical support is crucial for optimizing its effectiveness.

Impact on Curriculum Delivery

A. Effectiveness of Hybrid Learning in Various Subjects

Hybrid learning has been reported to significantly enhance curriculum delivery across various subjects.

Educators have noted that the blend of in-person and online teaching methods allows for more dynamic and flexible instructional strategies. For example, in science and technology subjects, hybrid learning facilitates interactive simulations and virtual labs, which are not easily achievable through traditional methods. Humanities subjects benefit from the vast array of online resources and multimedia content that enrich discussions and provide diverse perspectives. Overall, 52.4% of respondents indicated that hybrid learning significantly improved their approach to curriculum delivery, with 28.6% noting some improvement.

B. Comparisons with Traditional Teaching Methods

When compared to traditional teaching methods, hybrid learning offers several advantages:

Flexibility and Accessibility: Hybrid learning provides students with the flexibility to access course materials and participate in learning activities at their convenience, catering to different learning paces and schedules. This is particularly beneficial for students with diverse needs and commitments.

Enhanced Engagement: The integration of digital tools and resources fosters greater student engagement. Interactive platforms and multimedia content make learning more engaging and effective, as students are actively involved in the learning process.

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Personalized Learning: Hybrid learning enables personalized instruction, allowing educators to tailor their teaching approaches to individual student needs. This can lead to improved learning outcomes, as students receive more targeted support.

Despite these benefits, traditional teaching methods still hold value, particularly in providing face-to-face interaction and immediate feedback. However, the flexibility, engagement, and personalization offered by hybrid learning make it a highly effective complement to traditional methods, enhancing the overall educational experience. Addressing the challenges related to technological resources and support can further bolster the effectiveness of hybrid learning, making it a sustainable approach for diverse educational settings.

Challenges Faced by Educators

C. Technological Challenges

Educators primarily struggle with a lack of technological resources (76.2%), including insufficient access to devices and reliable internet. Technical difficulties during hybrid sessions are also a significant issue (52.4%).

D. Pedagogical Challenges

Insufficient training and professional development (52.4%) hinder educators' ability to effectively implement hybrid learning. Resistance from students (28.6%) and colleagues (23.8%) further complicates the adoption of new teaching methods.

E. Administrative Challenges

Time management issues (19%) arise as educators balance hybrid learning with traditional responsibilities. Additionally, institutional support varies, impacting the consistency and quality of hybrid learning implementation across different educational settings.

DISCUSSION

Alignment with Previous Research

The findings of this study align with existing research that highlights the benefits of hybrid learning in enhancing student engagement, flexibility, and personalized learning. Studies by Dhawan (2020) and Bonk & Graham (2019) also report similar positive impacts of hybrid learning on curriculum delivery. Like this study, they emphasize that hybrid learning facilitates interactive and dynamic instructional strategies, which improve

educational outcomes.

Unexpected Results and Their Implications

Unexpectedly, 19% of respondents reported no change in their curriculum delivery approach. This contrasts with the generally positive findings from other studies, such as those by Eze, Chinedu-Eze, & Bello (2021), which found broader positive impacts. This discrepancy suggests that hybrid learning's benefits may not be universally experienced without adequate support and resources, highlighting the importance of context-specific implementation strategies.

Challenges Identified

The study's identification of significant barriers, such as a lack of technological resources and insufficient training, is consistent with other research findings. For instance, Garrison & Kanuka (2004) and Moore et al. (2011) also report that technological challenges and the need for professional development are critical issues that hinder the effective implementation of hybrid learning. However, some studies, such as those by Johnson et al. (2016), suggest that with proper support, these barriers can be overcome, leading to successful hybrid learning environments.

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These findings highlight the necessity of addressing technological and training challenges to maximize hybrid learning's benefits. Policymakers and educational leaders should focus on providing comprehensive professional development, ensuring equitable access to technology, and tailoring implementation strategies to specific educational contexts. This approach will enhance the effectiveness of hybrid learning, making it a viable and sustainable model for improving educational outcomes.

RECOMMENDATIONS

A. Educational Policymakers

Invest in Infrastructure: Allocate funds to improve technological infrastructure in schools, ensuring reliable internet access and up-to-date digital devices for educators and students.

Promote Equitable Access: Implement policies that address the digital divide by providing subsidies or grants to under-resourced schools and communities, ensuring all students have equal opportunities to benefit from hybrid learning.

Standardize Professional Development: Mandate comprehensive, ongoing professional development programs focused on hybrid learning methodologies, ensuring consistent training across all educational institutions.

B. Educational Institutions

Establish Technical Support Systems: Create dedicated IT support teams to assist educators with technical issues, ensuring minimal disruption during hybrid learning sessions.

Encourage Peer Collaboration: Facilitate the formation of peer support networks and mentorship programs where experienced hybrid learning educators can share best practices and provide guidance to less experienced colleagues.

Customize Training Programs: Offer tailored professional development sessions based on educators' levels of familiarity with hybrid learning, including beginner, intermediate, and advanced modules.

C. Teachers and Educators

Engage in Continuous Learning: Actively participate in professional development opportunities to stay updated with the latest hybrid learning strategies and technologies.

Utilize Available Resources: Make full use of available technological tools and resources to enhance curriculum delivery and engage students more effectively.

Seek Feedback and Reflect: Regularly seek feedback from students and peers to evaluate the effectiveness of hybrid learning methods and make necessary adjustments to improve the learning experience.

D. Technology Providers

Develop User-Friendly Tools: Create and supply educational technology tools that are easy to use and integrate seamlessly into existing educational frameworks.

Offer Training and Support: Provide comprehensive training and ongoing support for educators to ensure they can effectively utilize the technology in hybrid learning environments.

E. Students and Parents

Engage Actively: Encourage active participation in hybrid learning activities and provide feedback to educators on what works well and what needs improvement.

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Support Learning at Home: Ensure students have a conducive learning environment at home, equipped with the necessary technology and support for hybrid learning.

Summary

This study examined the perceptions of teacher educators towards hybrid learning and its impact on curriculum delivery in Nigeria. The findings reveal a generally positive attitude towards hybrid learning, with 69.6% of respondents having implemented it in their teaching. A significant majority rated their overall hybrid learning experience as positive or very positive, underscoring its effectiveness in enhancing educational practice. While the adoption of hybrid learning shows promise, addressing the technological and training challenges is crucial for maximizing its benefits. Policymakers and educational leaders should focus on enhancing infrastructure, providing comprehensive professional development, and ensuring equitable access to technology. These steps will support the effective implementation of hybrid learning, ultimately leading to improved educational outcomes and sustainable development in curriculum delivery.

CONCLUSION

This study highlights the positive perceptions and significant benefits of hybrid learning among Nigerian teacher educators, with the majority reporting improvements in curriculum delivery. However, challenges such as insufficient technological resources and inadequate training hinder its full potential. Addressing these issues through targeted investments in infrastructure, comprehensive professional development, and equitable access to technology is crucial. By implementing these recommendations, educational stakeholders can enhance the effectiveness of hybrid learning, ensuring it contributes to sustainable development and improved educational outcomes. Future research should focus on long-term impacts, comparative effectiveness, and strategies to bridge the digital divide.

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