

Bayero Journal of Education in Africa Volume 11 No 3 2025

BAYERO JOURNAL OF EDUCATION IN AFRICA



Volume 11 Number 3, 2025

**FACULTY OF EDUCATION,
BAYERO UNIVERSITY,
KANO- NIGERIA.**

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BAYERO JOURNAL OF EDUCATION IN AFRICA

©Faculty of Education
Bayero University, Kano

ISSN: 2360 – 7637

E ISSN 1595 - 5745

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Faculty of Education
Bayero University, Kano – Nigeria

Printed & Published By:

***Faculty of Education Bayero
University, Kano - Nigeria***
P.M.B 3011, [Tel:+2348083470186](tel:+2348083470186),
E-MAIL: dean.edu@buk.edu.ng
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Redefining the System of Education in Nigeria: Case of Amalgamating Theoretical and Practical Knowledge

By

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Abstract

The Nigerian education system has historically emphasized theoretical and book-based learning at the expense of practical skills, resulting in graduates who excel in intellectual reasoning but struggle to apply their knowledge to solve societal problems. This imbalance traces back to colonial educational policies, which were intentionally structured to limit African societies to subordinate economic roles. Drawing on qualitative analysis and scholarly perspectives, this paper critically examines the dichotomy between theoretical and practical knowledge within Nigeria's educational framework. It highlights the implications of this divide for youth employability, technological advancement, and national development. The paper advocates for a paradigm shift: integrating laboratory work, field experiences, and industry collaboration into educational curricula to bridge this gap. The discussion also situates the problem within philosophical debates of idealism and pragmatism and draws on Jerome Bruner's discovery learning to illustrate transformative pedagogical practices. Finally, actionable recommendations are offered to align Nigeria's education system with global best practices and national socio-economic needs.

Keywords: *Nigerian education, theoretical knowledge, curriculum reform, discovery learning*

Introduction

Education is central to human and societal development, shaping intellectual capacities, moral character, creativity, and practical skills necessary for nation-building. In Nigeria, however, education has largely remained limited to the intellectual domain, focusing on abstract knowledge and rote memorization while neglecting practical application and moral formation (Peter, 2021). This imbalance often produces what Omoregbe (2013) calls "intellectual giants but moral dwarfs": graduates with strong theoretical understanding but lacking practical skills, problem-solving abilities, and ethical grounding.

This structural issue is rooted in colonial education policies historically designed to serve European economic interests rather than Africa's development (Rodney, 1972). Colonial education

aimed to train clerks and low-level administrators to support the colonial system, rather than cultivating engineers, scientists, and innovators needed for local progress. As a result, technical and vocational education was underdeveloped, a legacy that still shapes Nigeria's curriculum, which emphasizes examinations and theory over creativity, hands-on learning, and critical thinking. Contemporary educational structures continue to reinforce this gap. The curriculum remains book-centered and classroom-bound, with limited laboratory work, field experience, and industry collaboration. Academic success still prioritizes publications over innovation and community impact, misaligning education with societal needs. Consequently, many Nigerian graduates are theoretically educated but ill-prepared for

dynamic work environments, leading to high rates of unemployment and underemployment.

Globally, there is growing recognition that sustainable development relies on balancing theory and practice (Eraunt, 2000; Bereiter & Scardamalia, 2013). Countries that combine intellectual rigor with experiential learning and ethical education produce graduates who are adaptive, innovative, and socially responsible. This paper argues that for Nigeria to transform education into a driver of economic growth and social development, it must overcome the colonial legacy of theoretical dominance by integrating practical, problem-solving, and laboratory-based approaches across all levels of learning.

Objective of the Study

The following objective of the study is to:

1. To critically examine the imbalance between theoretical and practical knowledge in Nigeria's education system and propose actionable strategies to integrate experiential learning, thereby aligning education with national development needs.

Conceptual Framework Concept of Education

The term *education* originates from the Latin words *educare* and *educatum*, which can be translated as “to lead out,” “to rear,” or “to guide” (International Encyclopedia of Social and Behavioral Science, 2015). This etymology itself provides profound insight into the fundamental purpose and philosophy of education. Education, in its classical sense, is not merely about the passive transfer of information from teacher to student; rather, it is an active, dynamic process of drawing

out and cultivating the latent potentials within an individual. This process extends beyond cognitive development, encompassing the nurturing of moral virtues, practical skills, and social consciousness.

Historically, philosophers and educators have emphasized this comprehensive vision of education. Plato viewed education as a means of turning the soul toward truth and justice, shaping character and intellect alike. Aristotle, similarly, advocated for “*paideia*”, a form of holistic upbringing that balanced intellectual cultivation, ethical formation, and physical training, all aimed at preparing citizens to live virtuous and productive lives in society.

In modern educational thought, this holistic view persists. Dewey (1938), for instance, argued that education should be rooted in real-life experiences and oriented toward developing the whole person, not just preparing individuals for exams or narrow professional roles. Education, from this perspective, becomes a lifelong process that develops not only the mind but also the heart and hands, equipping individuals to engage critically and constructively with their communities.

Thus, beyond the acquisition of theoretical knowledge, **education is an integrative process** that aims to:

- Develop **intellectual capacities**: such as critical thinking, problem-solving, creativity, and abstract reasoning.
- Cultivate **moral and ethical awareness**: nurturing values like integrity, empathy, responsibility, and respect for others.
- Build **practical skills**: enabling learners to apply knowledge effectively in real-world contexts, innovate, and adapt to societal

challenges.

By doing so, education prepares individuals to participate meaningfully in society, not merely as passive recipients of culture, but as active contributors to social, economic, and political life. This aligns with the teleological understanding of education as a purposeful endeavor aimed at personal growth and collective progress (International Encyclopedia of Social and Behavioral Science, 2015).

Theoretical vs. Practical Knowledge

Theoretical knowledge refers to abstract, codified understanding of principles, models, and explanations that help learners answer “why” and “how” phenomena occur (Thomas, 2007; Eraut, 2000). This form of knowledge provides a conceptual framework essential for analyzing complex systems, predicting outcomes, and fostering critical thinking. However, it often remains detached from the lived realities and unpredictable variables of real-world contexts (Bereiter & Scardamalia, 2013).

Conversely, practical knowledge or “know-how” is rooted in direct experience, adaptation, and context-specific problem-solving (Setiya, 2009; Schön, 1983). It enables learners to apply, test, and refine theoretical insights in real situations, fostering adaptability and innovation. For instance, laboratory experiments, internships, and community-based projects translate abstract theories into functional solutions, bridging the gap between classroom and society.

Scholars widely recognize that both forms of knowledge are complementary rather than mutually exclusive. While theoretical frameworks

illuminate underlying principles, practical engagement validates and contextualizes these ideas, ensuring their relevance and usability (Bereiter & Scardamalia, 2013; Kolb, 1984). In the Nigerian context, balancing these domains is critical to producing graduates who can think critically **and** act effectively.

Historical Context: Colonial Legacy and Its Lasting Impact

Nigeria’s education system cannot be fully understood without examining its colonial roots. As Rodney (1972) explains, colonial education was designed primarily to create clerks, interpreters, and subordinate administrators who would facilitate the economic and political interests of colonial powers. This system systematically marginalized technical and industrial training to prevent the rise of local competitors to European industries, leading to a narrow academic curriculum focused on literacy and clerical skills.

The 1920 Phelps Stokes Commission famously criticized missionary-led education for being overly academic, foreign-oriented, and disconnected from local economic and social realities (Rodney, 2021; Fafunwa, 1974). Yet, colonial reforms that followed largely preserved the examination-driven and theory-heavy approach, neglecting practical, vocational, and scientific training crucial for technological self-reliance. This historical design laid the groundwork for enduring challenges: a strong emphasis on certificates and rote learning at the expense of creativity, experimentation, and innovation (Obanya, 2014).

The colonial legacy thus continues to shape contemporary Nigerian education by privileging theoretical mastery and credentialism over hands-on competence, entrepreneurship, and nation-building (Mamdani, 2016).

Theoretical Perspectives: Idealism and Pragmatism

Idealism: Education as Abstract and Intellectual

Idealism, rooted in the philosophy that reality is fundamentally mental or spiritual, emphasizes the transmission of universal truths, abstract reasoning, and moral development (National Teachers' Institute, 2002; Ozmon & Craver, 2008). In educational practice, this often translates into curricula dominated by definitions, theories, and classical subjects aimed at intellectual cultivation rather than immediate practical use.

While idealism nurtures cognitive depth and ethical reflection, it tends to underemphasize skill acquisition and real-world applicability, which can leave learners theoretically knowledgeable but practically limited (Ornstein & Hunkins, 2017).

Pragmatism: Learning through Experience

In contrast, pragmatism, influenced by philosophers such as John Dewey, argues that knowledge derives its value and meaning from its consequences and utility in lived experience (Microsoft Encarta Reference Library, 2002; Dewey, 1938). Pragmatist education promotes active learning through experimentation, project-based learning, and community engagement, encouraging students to solve real-world problems collaboratively.

Applied to Nigeria, pragmatism calls for shifting

education away from purely theoretical instruction toward practical components such as laboratory work, apprenticeships, fieldwork, and service-learning projects (Obanya, 2014; Okebukola, 2015). This approach equips students with transferable skills, critical thinking, adaptability, and innovation that are essential for meaningful participation in the modern economy (Nwagwu, 2020).

By balancing idealism's intellectual rigor with pragmatism's emphasis on application, Nigeria can reform its education system to better serve both individual learners and broader national development goals.

The Interplay of Theory and Practice in Learning

For education to be truly effective and transformative, it must seamlessly integrate both theoretical and practical dimensions.

Theory provides the conceptual frameworks and systematic understanding that help learners make sense of complex phenomena. Practical application, on the other hand, brings these theories to life, demonstrating their relevance, limitations, and adaptability in real-world contexts.

Eraunt (2000) differentiates these two forms of knowledge by describing theoretical knowledge as codified, structured, and broadly transferable across contexts. This form of knowledge is often conveyed through lectures, textbooks, and formal curricula, and it plays a crucial role in shaping foundational understanding and analytical skills. By contrast, practical knowledge is largely tacit and context-dependent, acquired through direct experience and participation. It emerges from

“knowing-in-action,” where learners develop skills, judgment, and intuition that cannot be fully articulated in abstract terms but are essential for competent practice.

The importance of integrating theory with practice becomes evident through pedagogical strategies such as internships, fieldwork, and laboratory sessions. These experiential learning opportunities allow students to test, refine, and internalize theoretical concepts by confronting real-world challenges (Tang, 2022). For instance, a student studying agricultural science might better grasp plant biology by working directly on a farm, observing growth patterns, and troubleshooting environmental challenges. Such practical experiences not only deepen understanding but also develop problem-solving skills, adaptability, and confidence.

Empirical studies support this approach. Jakeway (2006) and Abdi (2014) found that inquiry-based and hands-on learning methods significantly enhance students’ comprehension, retention, and ability to apply knowledge creatively. These methods shift students from passive recipients of information to active participants in the learning process, fostering deeper engagement and critical thinking. Jerome Bruner’s concept of discovery learning further underscores the value of this interplay. Bruner argues that students learn most effectively when they are encouraged to explore, hypothesize, experiment, and draw conclusions through direct interaction with the material world (Akanbi & Opasina, 2020). Rather than simply memorizing established facts, learners become co-constructors

of knowledge, integrating theoretical insights with lived experience.

Ultimately, the synthesis of theory and practice ensures that education is not merely about “knowing that” but also about “knowing how.” This balanced approach produces graduates who are not only intellectually capable but also practically skilled and socially responsive attributes essential for addressing contemporary challenges and driving national development.

Challenges in the Nigerian Education System

Despite its critical role in national development, the Nigerian education system faces deep-rooted challenges that hinder its effectiveness and relevance. These challenges, shaped by historical legacies and contemporary realities, include:

1. Curriculum Limitations:

The Nigerian curriculum has long been shaped by an exam-centric tradition, largely inherited from colonial educational models that prioritized certification over capacity building (Fafunwa, 1974). Scholars such as Okebukola (2015) and Olaniran (2018) observe that this system continues to emphasize rote memorization and standardized testing, leaving little room for creativity, critical thinking, and applied learning. Eraut (2000) distinguishes between codified, transferable theoretical knowledge and tacit, practical knowledge developed through action, a distinction often neglected in Nigeria’s curriculum. The limited integration of entrepreneurship education, digital literacy, and life skills (Nwagwu, 2020) further hinders the development of adaptable graduates capable of thriving in an increasingly complex, technology-driven world. As highlighted

by Obanya (2014), there is an urgent need for curriculum reform grounded in local realities and designed to nurture holistic human development rather than mere credentialism.

2. Inadequate Infrastructure:

Infrastructure gaps significantly undermine quality education, particularly in public institutions. The Tertiary Education Trust Fund (TETFUND, 2022) and UNESCO (2021) report chronic shortages of well-equipped science laboratories, technical workshops, libraries, and ICT facilities, which are essential for hands-on learning. Even where resources exist, poor maintenance culture and governance challenges lead to rapid deterioration (Adebayo & Ogunyinka, 2021). Rural schools, in particular, face acute shortages, deepening educational inequality (Oduwaiye et al., 2018). Scholars like Saint, Hartnett, and Strassner (2003) argue that without substantial investment in modern facilities and digital infrastructure, efforts to modernize curricula or teaching methods remain superficial. The lack of power supply and internet connectivity in many institutions further constrains the integration of e-learning and innovative pedagogy (Umar, 2019).

3. Misaligned Academic Incentives:

Incentive structures within Nigerian higher education often prioritize theoretical scholarship and publication counts over practical innovation, community service, and entrepreneurship (Mamdani, 2016). This mirrors colonial academic traditions that positioned African universities as extensions of Western knowledge systems rather than engines of local development (Rodney, 1972).

As a result, research agendas frequently reflect international publication priorities rather than addressing pressing local socio-economic challenges (Oni, 2021). Saint et al. (2003) argue that fostering university–industry linkages, rewarding patents, and recognizing community-engaged scholarship could realign incentives toward innovation and impact. Without such shifts, the sector risks reinforcing an academic culture detached from the nation’s development needs.

4. Broader Structural Challenges:

Beyond these immediate factors, the Nigerian education system is also constrained by systemic governance and policy instability (Obanya, 2014). Frequent policy changes, inadequate funding (UNESCO, 2021), and bureaucratic inefficiencies weaken reform efforts. Education budgets remain consistently below the UNESCO-recommended 15–20% of national expenditure, undermining infrastructural renewal, teacher training, and research (World Bank, 2020). Moreover, socio-cultural factors such as gender disparities, regional inequality, and conflict, particularly in Northern Nigeria, further exacerbate educational exclusion (Adamu & Salihu, 2017; United Nations, 2021).

Conclusion

The Nigerian education system’s overreliance on theoretical knowledge rooted in colonial legacies has limited graduates’ practical competence, innovation, and employability. Bridging this gap requires deliberate reforms, including integrating laboratory work, field experiences, and industry partnerships into curricula. Drawing from philosophical frameworks like pragmatism and

pedagogical models such as Bruner's discovery learning, the study underscores that combining theory with practice will produce graduates who are not only intellectually capable but also adaptable, ethically grounded, and equipped to address contemporary socio-economic challenges. Such a holistic transformation is essential for repositioning education as a true engine of national development.

Recommendations

Below are several recommendations to overcome these challenges mention:

1. Redesign curricula to incorporate problem-solving, entrepreneurship, digital

literacy, and life skills, shifting beyond rote memorization to produce adaptable, future-ready graduates.

2. Invest in modern infrastructure to ensure the establishment and maintenance of laboratories, ICT facilities, and workshops across all regions, including underserved rural areas.
3. Realign academic incentives to reward patents, community-driven projects, and industry partnerships in addition to traditional scholarly publications.
4. Increase and stabilize education funding to meet international benchmarks, guaranteeing equitable access and consistent, sustainable policy implementation across the country.

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Confronting Emerging Issues and Unlocking Opportunities in Adult Education and Community Development: A Qualitative Study

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Abstract

This qualitative study investigates the impact of emerging issues on adult education and community development, with a particular focus on identifying best practices and innovative solutions. Utilising a qualitative research approach, incorporating case studies and thematic analysis, the study examines the experiences of adult learners and community development practitioners. The findings underscore the significance of lifelong learning, community engagement, and collaborative partnerships in addressing contemporary challenges in adult education and community development. The study concludes that adult education and community development programmes can promote social change and sustainable development by adopting a multifaceted approach that incorporates these elements. Recommendations include policy support, collaborative partnerships, and harnessing innovative technologies to increase access to education and training.

Keywords: Adult Education, Community Development, Emerging Issues, Lifelong Learning

1.0 Introduction

The rapid pace of technological change, demographic shifts, and environmental degradation are just a few examples of the emerging issues that adult education and community development programmes must address. These programmes are essential components of promoting social change and sustainable development, but they often face challenges related to funding, access, and sustainability. This study aimed and investigated the impact of emerging issues on adult education and community development, with a particular focus on identifying best practices and innovative solutions. The research questions guiding this study are: (1) How do emerging issues affect adult education and community development? (2) What are the best practices and innovative solutions for addressing these challenges? The findings of this study underscore the significance of lifelong learning,

community engagement, and collaborative partnerships in addressing emerging issues in adult education and community development.

2.0 Literature Review

The literature on adult education and community development highlights the importance of addressing emerging issues in these fields. Research has shown that adult education programmes can have a positive impact on individuals, communities, and society as a whole (Brookfield, 1986; Knowles, 1980). However, these programmes often face challenges related to funding, access, and sustainability (Merriam & Bierema, 2014). Community development initiatives also face challenges related to community engagement, partnership building, and resource mobilisation (Kenny, 2011). This study reviewed the literature on the impact of emerging issues on adult education and community development, with a

particular focus on identifying gaps and best practices.

3.0 Methodology

This study utilises a qualitative research approach, incorporating case studies and thematic analysis to examine the experiences of adult learners and community development practitioners. The research design involves a thorough review of existing literature and empirical data to identify best practices and innovative solutions. The study used a purposive sampling strategy to select participants, and data were collected through semi-structured interviews and focus groups.

4.0 Findings

The study identifies several best practices and innovative solutions, including the use of technology to increase access to education and training, and the development of partnerships between community organisations, government agencies, and private sector organisations. As aforementioned; the findings of this study underscore the significance of lifelong learning, community engagement, and collaborative partnerships in addressing emerging issues in adult education and community development.

5.0 Emerging Issues:

Adult education and community development are facing several emerging issues that require innovative solutions. These issues include:

5.1 Access and Equity:

Many adult learners face barriers to accessing education and training, particularly in rural and disadvantaged communities (Kidd, 1973; Merriam & Bierema, 2014). For instance, a study by the OECD (2019) found that adult learners from disadvantaged backgrounds often lack access to digital technologies, hindering their ability to participate in online learning.

5.1. Digital Divide:

The increasing use of technology in education and community development has created a digital divide, excluding those without access to digital tools (Brookfield, 1986; Tight, 1996). As noted by UNESCO (2019), the digital divide can perpetuate existing inequalities and hinder social mobility.

5.2. Funding and Sustainability:

Adult education and community development programmes often face funding challenges, threatening their sustainability (Knowles, 1980; World Bank, 2018). For example, a report by the World Bank (2018) highlighted the need for sustainable funding models to support adult education and community development initiatives.

5.3. Climate Change and Sustainability:

Adult education and community development must address the challenges of climate change and promote sustainable practices (IPCC, 2018). As emphasized by the IPCC (2018), climate change requires immediate attention and collective action to mitigate its impacts.

6.0. Unlocking Opportunities:

To address these emerging issues, adult education and community development must unlock new opportunities for growth and development. Opportunities include:

6.1. Lifelong Learning:

Embracing lifelong learning as a core principle of adult education, enabling learners to acquire new skills and knowledge throughout their lives (Merriam & Bierema, 2014; OECD, 2019). As noted by the OECD (2019), lifelong learning is essential for adapting to changing labour market

demands and promoting social mobility.

6.2. Community Engagement:

Fostering community engagement and participation in adult education and community development initiatives (Kidd, 1973; Brookfield, 1986). For instance, a study by Tight (1996) found that community-based adult education programmes can promote social cohesion and community development.

6.3. Collaborative Partnerships:

Building partnerships between government, civil society, and private sector organisations to leverage resources and expertise (Knowles, 1980; World Bank, 2018). As emphasised by the World Bank (2018), collaborative partnerships are essential for promoting sustainable development and addressing complex social issues.

6.4. Innovative Technologies:

Harnessing innovative technologies, such as mobile learning and online platforms, to increase access to education and training (UNESCO, 2019; IPCC, 2018). For example, a report by UNESCO (2019) highlighted the potential of mobile learning to reach marginalized communities and promote digital inclusion.

6.5. Sustainable Practices:

Integrating sustainable practices and environmental education into adult education and community development programmes (IPCC, 2018; OECD, 2019). As noted by the IPCC (2018), sustainable practices are essential for mitigating the impacts of climate change and promoting environmental sustainability.

7.0. Case Studies:

7.1. Mobile Learning in Africa:

A case study on the use of mobile learning to increase access to education and training for adult learners in Africa found that mobile learning can be an effective way to reach marginalised communities (UNESCO, 2019). For instance, a study by the World Bank (2018) found that mobile learning programmes in Africa have improved access to education and training for adult learners, particularly in rural area.

7.2. Community-Based Adult Education in Asia:

A case study on community-based adult education programmes in Asia highlighted their impact on community development and social change (Tight, 1996). For example, a study by the OECD (2019) found that community-based adult education programmes in Asia have promoted social cohesion and community development, and have empowered adult learners to take an active role in their communities.

7.3. Nigeria as a Case Study three:

Confronting Emerging Issues and Unlocking Opportunities in Adult Education and Community Development in Nigeria cannot be over emphasised. Adult education and community development in Nigeria face systemic challenges, including low literacy rates, funding gaps, and sociocultural barriers. However, technological advancements and policy reforms present opportunities for sustainable growth in a view to examining key issues, exploring innovative solutions, and proposing actionable strategies to

enhance adult learning and community empowerment in Nigeria by 2025.

(UNESCO, 2024) opined that adult education is a critical driver of sustainable development, particularly in Nigeria, where approximately 38% of adults remain illiterate (UNESCO, 2024). Despite government policies such as the National Policy on Adult and Non-Formal Education (Federal Ministry of Education, 2023), systemic challenges persist. To put it more succinctly, this paper is also investigating emerging issues, including digital exclusion, gender disparities, and infrastructural deficits, while highlighting opportunities for improvement through technology, policy reforms, and community engagement in Nigeria.

7.3.1. Systemic Challenges

Nigeria's adult education sector suffers from chronic underfunding, with less than 4% of the national education budget allocated to non-formal education (World Bank, 2024). Additionally, rural-urban disparities limit access, as many adult learning centres lack electricity and internet connectivity (Aderinoye, 2023).

7.3.2 Sociocultural Barriers

Cultural norms in Northern Nigeria often restrict women's participation in adult education due to patriarchal structures (Oluwafemi, 2024). Furthermore, societal stigma discourages adult learners, particularly older individuals, from enrolling in literacy programmes (Eze, 2023).

7.3.3 Technological Disruption

While digital learning platforms (e.g., Udemy, Coursera) offer flexibility, only 42% of

Nigerian adults possess basic digital skills (GSMA, 2024). The digital divide exacerbates inequalities, particularly in rural areas where smartphone penetration remains low (NBS, 2025). 7.4.0. Opportunities for Improvement in Nigeria:

7.4.1 Policy and Institutional Reforms. The revised National Policy on Adult Education (2025) provides a framework for public-private partnerships (PPP) in Nigeria. For instance, collaborations with telecom companies (e.g., MTN, Airtel) could subsidise data costs for e-learning (Okeke, 2024).

7.4.2 Digital Inclusion Strategies

Mobile-based learning: USSD and SMS platforms (e.g., Jolly Phonics for Adults) can reach learners without smartphones (Adeleke, 2023).

7.4.3. Community radio programmes: Localised content in Hausa, Yoruba, and Igbo can improve engagement (BBC Media Action, 2024).

7.4.4. Gender-Sensitive Approaches

Women's cooperatives, such as those supported by LEAP Africa, have successfully combined financial literacy training with vocational skills (Okafor, 2025). Scaling such initiatives could bridge gender gaps.

8.0 Conclusion.

This study concludes that adult education and community development programmes can promote social change and sustainable development by adopting a multifaceted approach that incorporates lifelong learning, community engagement, and collaborative partnerships. The study highlights the

importance of addressing emerging issues in these fields, and identifies several best practices and innovative solutions that can be used to promote positive change.

To put it more succinctly; Confronting emerging issues and unlocking opportunities in adult education and community development requires innovative strategies, collaborative partnerships, and a commitment to lifelong learning and sustainable practices (Merriam & Bierema, 2014; World Bank, 2018).

By embracing these principles, we can promote sustainable development and social change, and empower adult learners and communities to thrive (Kidd, 1973; Knowles, 1980).

8.0 Recommendations:

8.1. Policy Support

Governments and policymakers should provide support for adult education and community development initiatives, including funding and resources (World Bank, 2018). For example; Government should increase funding for adult education through tax incentives for corporate sponsors in Nigeria.

8.1.2. Expanding digital literacy programmes via partnerships with tech hubs (e.g., Andela, CoCreation Hub) in Nigeria.

8.1.3. Strengthening community-based organisations to deliver culturally relevant adult education in Nigeria.

8.1.4. Nigeria's Adult education sector must address structural inequalities while leveraging technology and policy reforms. By prioritising

inclusive and flexible learning models, Nigeria can achieve Sustainable Development Goal 4 (SDG 4) by 2030.

For instance, a study by the OECD (2019) found that government support for adult education and community development initiatives can improve access to education and training for adult learners.

8.2. Collaborative Partnerships:

Organisations should build partnerships to leverage resources and expertise, and promote sustainable development and social change (Knowles, 1980; World Bank, 2018). For example, a study by the World Bank (2018) found that collaborative partnerships between government, civil society, and private sector organisations can promote sustainable development and social change.

8.3. Innovative Technologies:

Adult education and community development programmes should harness innovative technologies to increase access to education and training (UNESCO, 2019). For instance, a study by UNESCO (2019) found that mobile learning can be an effective way to reach marginalised communities and promote digital inclusion.

8.4. Sustainable Practices:

Adult education and community development programmes should integrate sustainable practices and environmental education to promote sustainable development (IPCC, 2018). For example, a study by the IPCC (2018) found that sustainable practices can mitigate the impacts of climate change and promote environmental sustainability.

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Community Development: A Catalyst for National Transformation and Sustainable Development in Nigeria

By

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Abstract

The study aims to assess the impact of community-driven initiatives on various aspects of national development, including economic growth, social progress and sustainability. The objectives of this paper are to: identify and analyse the key community development strategies employed in Nigeria; (2) evaluate the effectiveness of these strategies in achieving sustainable development goals; (3) examine the challenges and opportunities associated with community development initiatives; and (4) provide recommendations for enhancing the role of community development in national transformation. The methodology employed is qualitative, involving in-depth qualitative review of journals and officials documents. The paper shows that successful community-driven initiatives lead to improved infrastructure, increased access to education and healthcare, enhanced economic opportunities, and strengthened social cohesion. The paper concludes that community development is a driver of national transformation and sustainable development in Nigeria. The paper also emphasise that empowering communities through participatory approaches, providing adequate resources, and fostering good governance are essential for achieving meaningful and lasting development outcomes. The paper recommends that, there is need for increased government investment in community development programs; the promotion of community participation and ownership in development projects; the strengthening of institutional frameworks for community development; the implementation of effective monitoring and evaluation mechanisms; and the fostering of partnerships between government, NGOs, and the private sector to support community development initiatives

Keywords: *Community Development, National Transformation, Sustainable development*

Introduction

Community Development emerges to be a critical catalyst in a nation where top down approach to development has failed to yield much progress. This is because top-down approach often fails to address the unique need and aspirations of local communities. Therefore, National transformation and sustainable development are not merely abstract but imperative for countries seeking to improve the quality of life for their citizens. Adegoke (2005) asserts that the ultimate goal is when any discipline can contribute to the development of competency as a tool for empowerment in all its ramification. National

transformation should be the starting point and the essence of all discipline in either or educational formal system or non-formal system. Disciplines ranging from medicine, law, architecture government, biology and even education should be established primarily because of the need for our communities to be developed in extension for national transformation. Baiyelo (2006) opines that learning should be made more relevant to productive activities, wealth creation, capacity building, competence building, skill acquisitions and job creations.

Community development in Nigeria is as old as humankind and there are vital proofs that at one point or the other people have craved for and engaged in one form of development or the other to enable them to function more easily and effectively in the society. Basically, community development entails the advancement of community involving a common sense of identity, values, belief, capability and rationale. People at all levels should have access to goods, services, opportunities, decision-making processes and information. Most often members of the community would choose to voluntarily carry-out development activities even without been paid just to see to the smooth running of the community. Community development emphasizes empowerment, equality, social justice, participation and representation.

Over the years the struggle to eradicate poverty and maintain a satisfying standard of living in Nigeria has been the plan of the government. This is because the government craves for a developed nation (Bonye, Aasoglenang & Owusu-Sekyere, 2013; Amakye, 2017). Community development is a structured intervention that gives communities greater control over the conditions that affect their lives (Anam, 2014). National transformation in Nigeria is crucial to improve the standards of the citizens. Development in this case requires a multifaceted approach and integrated approach (Ayanwu and oturan (1992).

Concept of Community Development.

The Concept of Community development can be viewed from different scholarly perspective. According to Hetcher (1980), Community development is a process of commitment to the

development of all people, through local participation in setting priorities, sharing resources, and study of circumstances in such a way that the community can enhance each other. Akande, (2002) Saw Community development as an opportunity for local citizens, to become active partners in addressing problem and challenges in the communities. Anyanwu (2002) also pointed that Community development as theoretical and practical in nature. The concept of community development is authenticated by practice that is, action. Community Development fosters local Communities to be aware of their need and to initiate a process in which those needs can be met.

Concept of National Transformation.

National transformation typically encompasses a nation's Plans and strategies for economic, Social and political development. National transformation is meant to outline the government's vision and priorities for progress, addressing specific sectors like agriculture, education and technology, aiming to modernize and improve various aspect a national life.

Transformation can be seen as a fundamental shift in the deep orientation of a person, an organization, or a society; such that the world is seen in new ways and new actions and results become possible that were impossible prior to the transformation (Asobie, 2012). It is a mandate for a radical, structural and fundamental re- arrangement and re-ordering of the building blocks of the nation. It portends a fundamental reappraisal of the basic assumptions that underlie our reforms and developmental efforts that will and should alter the essence and

substance of our national life. The expectation of most Nigerians is for a development blueprint that will transform the economy, reinvent the politics of our nation, secure the polity, care for the underprivileged, and provide responsible, responsive and transformative leadership. Fundamentally, it is significant to bring to bear the fact that Nigeria in the past has been known with one transformation programme or the other. These as have earlier noted, had either through lack of continuity which were brought about by changes in government, or as a result of policy summersault had been brought to an abrupt end. Before the 1980s, the reforms were purely in the form of extended national perspective plans that attempted to mobilize human, material and natural resources of the nation to achieve goals of national life. This was also echoed out by a onetime Vice President of Nigeria, Atiku Abubakar that; “Nigeria has joined several countries in affirming that sustainable national development depends on fostering the full capacity of all citizens, both women and men” (National Population Census, 2001). There was the 1962-68 Economic Plan, then the 1970-1974 Plan, the 1975-1980 Plan, and the 1981-1985 Plan. Often, these Plans went beyond mere economic prescriptions to address social, human and political goals. Thus, the 1970-74 Plan for example defined the national objectives to be the building of:

- a. A united, strong and self-reliant nation;
- b. A great and dynamic economy;
- c. A just and egalitarian society;
- d. A land of bright and full opportunities for all

citizens; and

- e. A free and democratic society (Osisioma, 2012).

Nevertheless, poverty, inequality, unemployment, underemployment, security challenges and political instability has limited the actualization of the above national objectives till date.

Concept of Sustainable Development

The pursuit of National transformation is incomplete without a consideration on how national transformation can be sustainable. Strategies for national transformation need to leave developing to developed status, this encompasses aspect of modernization, structural transformation, exported growth, human capital development, and political economy.

Community Development as Catalyst for National Transformation and sustainable development Community development is a catalyst for National transformation because it is locally based as members of the community are the major participants. It is necessary that members of the Community should be fully involved in each process of community development. The goal of Community development is clearly to Sensitize Community members that is to say all citizens of the nation should know about their economic, social political and physical needs and how best they can become useful to the community at large, in contrast to citizens been self-centered, community development clamors for social cohesiveness fostering the spirit of unity, togetherness and belongingness.

Factors Deterring National Development in Nigeria

1. Poverty and Inequality

Nigeria is rich in natural resources consisting of crude oil, coal, gold but despite it abundant natural resources, it struggles with high level of poverty and income inequality and this has limited the wellbeing of a large portion of its population. Abiona (2012) States that many people live below subsistence level in Nigeria. Thus, poverty and inequality has limited the contribution of community members in activities to foster their respective communities.

2. Unemployment and underemployment

Employment and underemployment are the enduring and political issues of modern life and has been affected by the technological advancement and political movement Abiona (2012) the effects of unemployment and underemployment are social in nature and community development is expected to solve this problem. High unemployment and underemployment rates particularly among young people are a major challenge, contributing to social unrest and economic stagnation. This deters the unemployed and the underemployed individuals from participating fully in the process of community development.

3. Underdeveloped Infrastructures.

The Government in power often dictates the nature of community development project at the moment bringing into existence the Top- down approach. Meanwhile, for national transformation, Nigeria need to begin the bottom-top approach. Only then would there be national transformation and sustainable

development. Community members are meant to be fully involve in choosing appropriate facilities needed in the community. Therefore, inadequate infrastructure including roads, electricity and telecommunications hinders economic activity and limits access to essential sources making transformation difficult in Nigeria.

4. Political Instability

The political instability in Nigeria has affects stability of policies. It is impossible to keep politics from national transformation and sustainable development because our leaders have 60% of the role to play in ensuring citizens of Nigeria respects the law and policies of the country. Political leaders should show good example by adhering to the policies that have been created by the government in order to encourage members of the community to actively involve and contribute toward the development of their respective communities.

5. Security challenge

Security challenges are one among other challenges bedeviling national development in Nigeria. The activities of the Boko Haram in northern Nigeria, Bandits, Herdsmen and other kidnappers has posed a security challenge that is virtually affecting all aspect of Nigeria's national transformation. According to Okonkwo and Efeurhobo (2015), the activities of insurgents in Nigeria adversely reduced the life span of the people and brought untold hardship to the country with the displacement of the people. Development is guaranteed in a society that is security conscious, therefore, Okobia (2024) states that proactive measures rather than palliative

measures are needed to throat this menace in order facilitate adequate conducive community development.

6. Over population

Nigeria's development is significantly hampered by a confluence of factors, with overpopulation and illegal mining emerging as key deterrents. The country's rapid population growth, estimated to be over 200 million people, places immense strain on resources, infrastructure, and social services. This demographic pressure exacerbates existing challenges, including poverty, unemployment, and environmental degradation, which in turn fuel social unrest and instability. The competition for limited resources, such as land and water, intensifies conflicts, particularly in areas affected by illegal mining, where communities clash over access to mineral wealth and the environmental consequences of extraction. The strain on infrastructure, such as roads, schools, and healthcare facilities, is also amplified by a growing population, hindering economic productivity and the overall quality of life.

7. Illegal mining

Illegal mining, a pervasive issue in Nigeria, further undermines national development by diverting resources, causing environmental damage, and fostering insecurity. The sector's contribution to the GDP is minimal, accounting for only 0.75% as of 2023, despite the presence of over 44 commercially viable minerals. Illegal mining activities, often carried out by artisanal miners, lead to significant revenue losses for the government, estimated at approximately \$9

billion annually due to illegal mining and gold smuggling alone. These activities also cause severe environmental damage, including deforestation, water contamination, and soil degradation, as well as health crises like lead poisoning. Furthermore, illegal mining fuels insecurity, as it is often linked to banditry and other criminal activities, particularly in the North West region, where an estimated 80% of mining is carried out illegally. The involvement of foreign nationals and corporations in illegal mining, often in collaboration with corrupt officials, further complicates the situation, undermining efforts to formalise the sector and promote sustainable development. The government's efforts to combat illegal mining, such as the recruitment of mining marshals and the use of satellite surveillance, are crucial, but addressing the underlying issues of poverty, corruption, and weak regulatory enforcement is essential for achieving meaningful progress.

Basic Components of Community Development that Serves as the Catalyst for National Transformation and Sustainability

Some basic Components of community development that makes Community development a Catalyst for National transformation and sustainably development includes:

1. Community Responsibility

The enhancement of civic responsibilities and competencies serves as the primary goal of community development (Osakwe 2010), the community should be made to encourage and support developmental programmes in all its ramifications. Citizens of Nigeria Should be

encouraged to actively participate in programmes to improve their welfare. It is also to serve as the tool for the identification of needs, planning execution, utilization and evaluation of programmes or projects. This is because participation brings about greater interest in community programme. Therefore, adequate participation of community members in carryout community responsibilities can promote national transformation and sustainable development in Nigeria.

2. Shared Leadership and Decision Making

Community development is crucial for installing in citizens the value of patriotism, intergroup relations and unity in diversity as well as fostering a feeling of tolerance, national pride, and understanding of Nigeria's varied communities (Enem, 1999, Esu and Enu (2010). Community leaders are more interested in power sharing and the retention of positions rather than in the Solution of Community problems. Meanwhile, community leaders are meant to use leadership to cater for the needs of the Community by been democratic. Community leaders should not impose their will on the community but rather allow the community members decide their own fate. Thus, by partaking in decision making process citizens should be involve in leadership activities. This helps in promoting national transformation and sustainable development.

3. Self-Determination

Self-determination is a component of Community development that encourages community members to organize themselves deliberately. Community development is a deliberate action by

the community and with the main objectives of changing and improving the community. Furthermore, self- direction emphasizes the importance of need identification and citizen participation, Abiona (2012). Communities should be able to determine what their needs are and the possible ways of solving their problems. Hence, self-determination should be determined by the community members as each society or community has its own needs and aspiration. This is significant as it helps in promoting national transformation and sustainable development.

4. Cost Effective and use of Community Resources.

Community development manages the resources of the community in order to attain cost effectiveness. The process of managing the resources in the nation helps the community to harness the resources that are eminent in the community they live. It encourages innovation and change rather than waiting for financial assistance before involving in any major community developmental practices. The use of volunteers would also be encouraged, this includes the men, women, youths and children who live in the community. To foster national transformation and sustainable development, it is imperative for communities to harness the resources of the community in order to cut cost to ensure economic growth for national transformation and sustainable development.

Conclusion

Nigerian's development is moving at a really sad and slow pace this particular paper examines community development as a catalyst for national development. The paper convincingly indicates

that community development, national transformation and sustainable development are entities that rely on themselves dependently. The paper expresses positive thoughts that if community development and its components are placed into practice, Nigeria will rapidly move from the level of a developing country to a more developing country and subsequently a developed country. This paper encourages the citizens of Nigeria to carefully invest in their local communities as development should start from the grass root level first.

Recommendations

1. Government should urgently create policies that suggest democracy in building Community Infrastructure for the community members. This policies should include; a shift towards participatory governance, decentralization of power and resources, investments in capacity building and a strong commitment to equity and inclusion.
2. Resources of each community in the nation should be used as an assets for community members to discover how they can improve on

those resources and develop their communities. Resource allocation should be carried out through community based development initiatives and establish funding mechanisms that prioritize community-led Projects.

3. Legislative frame work; Government should create or adjust laws that enables community involvement in local governance and development projects as it is a matter that concern them directly.
4. There is a need for government to support local economies as the nation's economy would not improve from the top but from the bottom.
5. Equity and Inclusion; marginalized groups should be paid attention so that they can have equal access to opportunities and resources. This also involves addressing social inequalities and promoting social justice in the nation.
6. Monitoring and evaluation; there should be monitoring and evaluating of works that have been done.

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Assessment of Difficulty Indices of 2019, 2020 and 2021 General English Examination of Federal College of Education (Technical), Bichi, Kano State, Nigeria

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Abstract

The study assessed item difficulty of 2019, 2020 and 2021 GSE 321 examination of Federal College of Education (Tech.), Bichi, Kano State, Nigeria. The objectives were to determine the mean difficulty indices (p-values) of the three examination years and to evaluate whether the items met acceptable standards for certification purposes. Survey research design was adopted. Through stratified proportionate sampling technique, a sample of 1,500 was drawn from a population of 3,896 answer scripts of the examination. The scripts were for three years: 2019, 2020 and 2021 with a total number of 20 multiple-choice items and 60 distractors for each examination. The study found out that the 2019, 2020 and 2021 versions of the examination had mean difficulty indices of 0.75, 0.74 and 0.80, respectively. This led to the conclusion that the examination, for the three sessions, was easy. Therefore, it was recommended that since the examination was used for the purpose of certification, the school management (examination unit) should include more difficult items.

Keywords: *Item Difficulty*, p-value, Classical Test Theory, Certification Examinations

Introduction

Assessment is a systematic process of collecting information to support educational decision-making. In educational contexts, achievement tests serve as key tools for measuring learning outcomes, certifying attainment, and guiding instructional decisions. Multiple-choice examinations, such as the GSE 321 General English test, are widely used because they offer objectivity and scalability. However, their validity depends on psychometric properties such as difficulty index, discrimination index, and distractor effectiveness. Test plays a vital role in determining achievement and certifying attainment. Tests are also used in providing incentives and goals for students as well as teachers, and providing information for decision making. Thus, in matters of evaluation and placement into jobs, tests have been a good

choice since they are devoid of most biases that may be termed systematic and provide equal channels to all candidates. However, the impact of tests is mostly put in terms of their uses for evaluation purpose. Each of these tests possesses some characteristics known as psychometric properties.

The difficulty index (p-value) represents the proportion of candidates answering an item correctly and is a critical measure in ensuring that test items are appropriately challenging. Certification examinations, in particular, require a balance of item difficulty to distinguish between varying ability levels. While previous studies (e.g., D'sa, Alharbi & Dionaldo, 2018; Azzopardi & Azzopardi, 2019) have examined difficulty levels in various disciplines, there is a lack of published analysis on the psychometric quality of the GSE 321 examinations at FCE(T) Bichi. This study addresses that gap by

evaluating the mean p-values for three consecutive years and providing implications for examination design.

Psychometric properties are characteristics of tests and their constituent items that describe attributes of an instruments as well as its appropriateness for use in particular situations. It also provides information about a test appropriateness, meaning fulness and usefulness or validity. The test's psychometric properties provide test takers and users with evidence of whether the test performs as portrayed (designed). Psychometric properties are generally represented by quantitative values. These values are often calculated using statistical procedures. The common psychometric properties of a test are item statistics and test statistics. Items statistics include term difficulty, item discrimination and distractor effectiveness

which are assessed through Classical Tests Theory (CTT) or Items Response Theory (IRT) Within the Classical Test Theory framework, item difficulty is simply the percentage of test-takers who answer an item correctly. According to many scholars (e.g. Tekin, 1984; McCown, Driscoll & Roop, 1996; Ozcelik, 1997; & Atalmis, 2018), item difficulty is the proportion of test-takers who choose the correct answer. Item difficulty index is symbolized p-value. It ranges from 0.00 to 1.00. A high and a low p-value indicates an easy and uneasy item, respectively. When 90% of the examinees answered an item correctly, the difficulty index is 0.90 (Dechamplain, 2010: Haladyna & Rodriguez, 2013: Livingston, 2006: Thorndike-Christ, 2010).

The formula for difficulty index as cited in Anikweze (2012) is:

$$D = \frac{R}{N} \times 100$$

Where:
D = difficulty index

R = number of students who answered the item right N = number of students tested.

Item difficulty was investigated in many studies that sought to evaluate the quality of various examinations. In studies conducted by D'sa, Alharbi and Dionaldo (2018) found out that (55%) of the items were easy, some studies proved otherwise. These found that must of the items were in difficult level. For example, Patitl, Palve, Vell and Boratne (2016) and Rao, Prasad, Sajitha, Permi and Shetty (2016) found out (37%) and (70%) of the items respectively. In the same vein, Ingale, Giri and Doibale (2017), Wajeetha, Hassan and Ansari (2018) and Azzopardi and Azzopardi (2019) found out that (80%), (81%), (80%) of the items

were moderate. Dhakne and Almale (2015) found that, 19 out of 30 items (63.34%) were acceptable ($D_i = 30 - 70\%$). Rao, Prasad, Sajitha, Permi and Shetty (2016) found that the mean difficulty index was 50.16 ± 16.15 while (5%) items were easy ($>70\%$) 10% were difficult ($p < 30\%$) and the remaining 85% of the items were in the acceptable range (30-70%). Juliet (2018) on psychometric analysis of BECE for Frecnch MCQs items of 2013, 2014 and 2015 in Anambra state, found that 2013 63% has acceptable difficulty indices, for 2014 70% had acceptable difficulty indices while 2015 72% had acceptable difficulty indices

Based on this researcher’s experience, the 2019, 2020 and 2021 items of GSE 321 examination of Federal College of Education (Technical), Bichi, Kano State, Nigeria, were of unknown psychometric properties. As such stakeholders, including the management of the college, might know how the items fared. They would not know how difficult or easy the items were.

Adetutu and Lawal (2023) found out that the absence of item analysis in developing the multiple choice items undermine the integrity of assessments, selection, certification and placement in our educational institutions. Also, improper use of item analysis leads to same fate while lopsided test items could lead to wrong award of grade and certificate (Olukoya et. al., 2018). Based on this problem, this sought to achieve one objective. To find out the mean p – values of 2019, 2020 and 2021 GSE 321 examination of Federal College of Education (Technical) Bichi, Kano State

Research Question

The study posed and answered the question:

1. What are the mean p – values of 2019, 2020 and 2021 GSE 321 examination of Federal College of Education (Technical), Bichi,

Kano State?

Methodology

Survey research design was adopted. Stratified proportionate sampling was applied, where strata were defined by academic year. The proportional allocation ensured that each year was represented according to its share of the total scripts.

From each stratum, scripts were randomly selected to form a total sample size of 1,500. The scripts were for three years: 2019, 2020 and 2021. Each version of the examination consisted of 20 multiple- choice items and 60 distractors. For all the three versions, the total number of items and distractors were 60 and 180, respectively. The difficulty index (p-value) for each item was computed using the formula: $p = R / N$, where R is the number of candidates answering correctly and N is the total number of candidates. The interpretation followed standard conventions: $p \geq 0.70 =$ Easy; $0.30 \leq p < 0.70 =$ Moderate; $p < 0.30 =$ Difficult.

Result

What are the mean p – values of 2019, 2020 and 2021 GSE 321 examination of Federal College of Education (Technical) Bichi, Kano State?

Table 1: The Mean Difficulty Index of the Items on GSE 321 2019, 2020 and 2021 Examinations

Year	N	Mean	Remarks
2019	20	0.75	Easy
2020	20	0.74	Easy
2021	20	0.8	Easy

The table above depicts the mean difficulty index of items on the GSE 321 2019, 2020 and 2021 examination of Federal College of Education (Tech.) Bichi, Kano State. The mean difficulty index was found to be 0.75, 0.74 and 0.8

respectively, thus, the average p-value was also an indication that the items on GSE 321 2019, 2020 and 2021 examinations of Federal College of Education (Tech.) Bichi, Kano State are easy items.

Discussions

The finding of the study reveals that the items were easy which had the p-value of 0.75, 0.74 and 0.8 respectively, quite a higher value. This information and other relevant data were depicted in the table shown earlier. The higher average p-value reveals that on higher, 75%, 74% and 80% of the candidates passed the items. The value also signifies that the items were easy. Had it been to say, 0.4 or 0.2, it would have been moderate or very difficult, respectively. For this situation to be acceptable it depends on the purpose of the examination. Usually, the purpose of test determines how weak or strong an item is. If the purpose is certification, placement, selection etc., low p-values are preferred (Kurpius & Stafford, 2006; Anikweze, 2010 cited in Abdullahi, 2016). Therefore, most of the items on a test should be strong. The purpose of the GSE 321 examination of Federal College of Education (Technical) Bichi, Kano State “was to certify the competent teacher education graduate for awarding NCE certificate”. Thus, most of its items would have to be strong, as portrayed above. The above Table shows that 75%, 74% and 80% of the items were on the easy side. Based on this the higher p-value of 0.75, 0.74 and 0.8 of the examination was an unacceptable development. It signifies that the items were weak and, therefore, unsatisfactory given the purpose of the testing programme. This finding is in line with findings of Azzopardi and Azzopardi (2019) who found that the overall items were easy in all years investigated with difficulty index of 0.8. It’s contrary to the findings of (D’sa, Alharbi & Dionaldo 2018; & Chauhan, Chauhan, Chauhan, Vaza & Rethod 2015) who’s found that the items were moderate with difficulty index of 0.68 and 0.57 respectively.

Conclusions

Test Analysis is a simple yet valuable procedure after the examination providing information about items level. Items analyses performed after the examination providing information regarding the difficulty level. In view of the findings of the study, it was concluded that the 2019, 2020 and 2021 GSE 321 examination was easy

Recommendations from the Study

This study recommended the following:

1. Increase the proportion of moderately difficult and difficult items to improve the discriminatory capacity of the examination.
2. Conduct periodic item analysis to maintain item quality and ensure alignment with certification standards.
3. Train examiners in test development techniques, including psychometric analysis, to improve item construction.
4. Ensure that items reflect the depth and breadth of the syllabus, targeting higher-order thinking skills.
5. Monitor the impact of changes on student performance and adjust item design accordingly to maintain fairness

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Promoting Parental Involvement in Educational Development for Transformative Education in Nigeria

By

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Abstract

The basis for educational development at community level must commence with the development of human resource. Parents can potentially play an important role in their children's overall learning and education, both at home, school and community they belong. This paper is a narrative of experiences gained from the life of the authors in respect of promoting parental involvement towards educational development for transformative education. The study found out that, low socioeconomic status, low educational attainment of parents, cultural and religious beliefs, communication gaps between school and parents, lack of time and work constraints, institutional and policy challenges, and gender responsibilities hampers effective parental involvement for educational transformation. The paper conclude that, parental involvement could be promoted through strengthening home-school communication, parental education and sensitization programmes, flexible and inclusive participation opportunities, flexible and Inclusive participation opportunities, community- based engagement models, community-based engagement models and policy reform and institutional support. The study recommended that, to improve parental involvement toward educational development, parents should be encourage attending school meetings; teachers should also provide them with an opportunity to communicate their expectations and concerns, government should improve the free education policy in the state to ensure every child enroll into the educational system and ensure that the children accomplish their goals and that teachers should not judge parents according to their inadequate level of education, low income status and should rather be submissive in the community.

Keywords: Parental Involvement, Educational Development and Transformative Education

Introduction

It is generally believed that the basis for educational development at community level must commence with the development of human resource. Education is a process through which the society assists the younger generation to understand the heritage of their past, participate productively in the society of the present as well as contribute to the future (Esu & Junaid, 2010). Education plays a pivotal role in transforming the world, including overcoming poverty, injustice, and inequalities. It is the vehicle through which knowledge and skills are strengthened to promote respect for human rights. Furthermore, through education, we can create safe spaces for learning, enlightenment, and development for all. It provides the role of making the people appreciate and respect the cultural diversity of Nigeria and to

realize the need for cooperation, tolerance, unity and people in the country (Sheshi, 2002).

However, the development of the nation starts from the family. When the parent succeeds in teaching and impacting good values in their children, the country becomes a better place to live. It is generally believed that the basis for educational development for transformative education at community level must commence with the development of human resource. Parents can potentially play an important role in their children's overall learning and education, both at home and at school. Significantly, the practice of parental involvement has also been shown to help offset other possible impediments to children's success in school.

Studies show that a child's academic success is not

determined solely by cultural or socio-economic factors like income or parental education. While researchers; Garcia & Thornton (2014) and Khajehpour & Ghazvini (2011) recognize a link between socio-economic status and academic achievement, they also emphasize that motivated families regardless of their status can positively influence their children's performance through active involvement. Research suggests that the quality of parent-child and parent-school interactions plays a more significant role in student achievement than socio-economic background alone. According to Garcia & Thornton (2014), he posited that parental involvement in education significantly enhances student performance, reduces absenteeism, and improves social behavior. Such involvement also helps build parents' confidence in education and can contribute to reducing crime and poverty in communities. The study discussed promotes greater parental participation in educational development as a means of achieving transformative education in Nigeria. It explores key concepts such as parental involvement, educational development, transformative education, their interrelated impacts, barriers to involvement, and strategies to enhance parental engagement.

Concept of Educational Development

Educational development refers to the process of improving the quality and effectiveness of education. This can involve enhancing teaching methods, curriculum design, educational policies, and infrastructure to ensure that students receive a well-rounded and impactful education. Educational development aims to foster critical thinking, creativity, and lifelong learning skills in students, as well as to address issues of access, equality, and diversity in education. Educational

development is a growing and vibrant field, defined as posited by Felten, Pingree, & Plank (2007). It is further cited by Sorcinelli, Austin, Eddy & Beach, (2005) as "helping colleges and universities function effectively as teaching and learning communities" and a "key lever for ensuring institutional quality and supporting institutional change."

Pomfret (2003) sees parental involvement as falling into three categories: service, student instruction, and decision making. Service activities are those tasks that indirectly assist the school in its prescribed activities. These activities may range from health aide and secretarial duties to assuming the role of community ombudsman. Within the realm of instruction, the parent's role either supplements or supports the teacher's role; the support role, the parent can assist the teacher in whatever learning activities the teacher undertakes:

- a) Instructional support; e.g. reading and telling stories as well listening to children read, report, or tell stories, etc.
- b) Technological support; e.g. operating tape recorder and record player, making overhead transparencies, etc.
- c) Clerical support; e.g. maintaining attendance records, making out lunch reports, etc.
- d) Monitorial support; e.g. supervising playground, corridor, and lunchroom, etc. and;
- e) Housekeeping support; e.g. checking for proper lighting, heating, and ventilation, helping keep furniture, books, and materials in order (Pomfret, 2003).

Concept of Transformative Education

Transformative education is a type of teaching and learning that aims to empower learners to take informed decisions and actions by fostering a deeper understanding of themselves and the world around them. It goes beyond rote

memorization and knowledge acquisition, emphasizing critical reflection, open-mindedness, and a shift in perspective. This process can lead to significant changes in how learners perceive their role and potential in the world. Transformative Education is a life-long process and need to be mainstreamed at all ages. Everybody can promote its values, through education, family, friends, the media and much more. This is done by developing learners' knowledge about local and global facts, realities and issues, by developing soft skills such as empathy and appreciation of diversity, but also by providing learners with skills to be able to take concrete actions to act towards building more inclusive, peaceful and sustainable societies (UNESCO, 2023). These soft skills also allow young people to be better suited to be integrated into the labour market, where skills such as being able to efficiently working with others, understanding complex issues and situations and working in a multicultural environment, being empathetic and result-oriented are increasingly required. The fundamental goal of transformative learning is to empower individuals to change their beliefs and assumptions of the world. This capacity to change is essential because it allows one to remain flexible in the face of the world's uncertainty.

Concept of Parental Involvement Parental involvement refers to a situation where parents are directly involved in the education of their children, they involve themselves and are involved by the school and teachers in the learning process of their children, and they fulfill their duties as parents in making sure that the learner is assisted in the process of learning.

It does not just refer to parents enquiring about the performance of a learner in schools, but also taking a role in communicating with their children with the aim of having a healthy relationship with them, so that the process of encouraging, mentoring, leading and inspiring may be genuine (Clinton & Hattie, 2013).

Parental involvement in children's education has evolved significantly over time. Initially seen in a limited way, the concept has gradually expanded despite some resistance to change. Since Gallup's (2001) survey on public attitudes toward schools, parental involvement has gained greater attention and developed into a multifaceted concept. Today, various programs operate under the umbrella of parent-community involvement, ranging from simply informing parents to actively involving them in educational decision-making.

Parental involvement has been widely discussed in educational forums, with Epstein's six-type framework being a key tool for defining effective practices and linking them to positive outcomes. This framework guides educators in building strong family-school partnerships and includes: parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community. Each type outlines specific ways families can support and engage in their children's education. Each type of involvement encompasses a variety of practices to be undertaken by teachers, parents, and students and is theoretically linked with a variety of distinct outcomes for students, teachers, and parents as well. Karnes et al. (2002) establish that any feasible model for parental involvement must follow a clearly delineated set of assumptions:

- 1) Family members will find the time to become involved if the involvement is meaningful.
- 2) Parents are easiest to involve when their goals and values are in agreement with those of the school, and most difficult when there is c. great discrepancy in the match.
- 3) Parents will become involved to the extent to which they participate in decision ranking.
- 4) Parents will involve themselves most when professional personnel showed a genuine respect for the family member as individuals.

Parental involvement significantly benefits children's education, and schools are increasingly recognizing its importance by encouraging family participation. Given this growing trend, it is essential to understand how parental involvement contributes to educational development and influences the implementation of educational programs.

Parental Involvement on Educational Development for Transformative Education

Parental involvement makes tremendous impact on education development for transforming the Nigerian system of education. According to Llamas and Tuazon (2016) parents become comfortable when the education system requires their involvement in school activities. The strong collaboration of parents with school authorities can lead to increased improvement in both physical and academic performance of the school. Hence, school administrators have to encourage parents to get involved and make contribution towards helping the school achieve its missions and goals (Sapungan & Sapungan, 2014).

Learners, whose parents are involved, are active and ready to learn, they learn to be punctual from young age, they learn to be persistent as the

parents would be continuously enquiring about their progress and they would not want to disappoint them. Taking responsibility becomes a part of the nature of such children as they plan ahead and are able to do their work according to their schedule, which is the quality of being organized (Sapungan & Sapungan, 2014). Through this, parents can be able to make sure that their children attended school (Hornby & Lafaele, 2011). According to La Bahn (1995) parents are within their rights by insisting that children focus on their school work, because some children are lazy therefore, come up with meaningless excuses in order to avoid doing their school work. This conceptual ethic suggests seven areas of parents work in which they should be involved, which are as follows:

- a) Ethical work, which consist of the parents' ability and responsibility to ommit and continue to be an enduring presence in the lives of their children.
- b) Stewardship work, which consists of the parents' ability and responsibility to cooperate, concentrate and create/dedicate material resources to their children and provide opportunities for them to achieve.
- c) Recreational work, which consists of the parents' ability and responsibility to cooperate with children, by relaxing and playing with children at children's developmental level.
- d) Spiritual work, which consists of the parents' ability to share their beliefs and confidence with their children and to counsel, guide, teach, advise and inspire them.
- e) Developmental work, which consists of the parents' ability to take care of and respond to the needs and wants of their children's education.
- f) Relational work, which consists of the parents' ability to share love, thoughts and feelings with

their children and to comfort them.

- g) Mentoring work, which consists of the parents' ability to share ideas and stories when asked, and to contribute towards sustaining and supporting the positive behaviour of their children.

Barriers against Parental Involvement in Educational Development for Transformative Education in Nigeria

Parental involvement in education is a cornerstone of transformative learning, contributing significantly to student success, motivation, and long-term educational outcomes. However, in the Nigerian context, numerous barriers hinder active and sustained parental engagement in their children's educational development. The following barriers are hereby discussed:

1. Low Socioeconomic Status Poverty and economic hardship remain major constraints to parental involvement in Nigeria. Parents from low-income households are often preoccupied with meeting basic needs and may lack the time, resources, or energy to support their children's education actively. Many are unable to afford school fees, and learning materials, which affects not only access to education but also their participation in school activities (Adeniran, 2011; Olaniyan & Yahaya, 2016).

2. Low Educational Attainment of Parents

Many Nigerian parents, especially in rural areas, have little or no formal education, which limits their ability to assist children with homework or communicate effectively with teachers. This gap can lead to a lack of confidence and reluctance to engage with school authorities or attend meetings (Akinware, 2018).

3. Cultural and Religious Beliefs

Certain cultural and religious norms can discourage parental involvement, particularly in the education of girls. In some communities, educating girls is not prioritized, and early marriage is preferred. Additionally, patriarchal beliefs often exclude mothers from decision-making roles in their children's education (Aluede & Afen-Akpaída, 2020).

4. Communication Gaps Between Schools and Parents

In many Nigerian schools, there is poor communication between school authorities and parents. Limited efforts are made to engage parents through regular updates, meetings, or feedback mechanisms. Language barriers and the lack of inclusive communication channels further exacerbate the disconnect (Ajayi et al., 2015).

5. Lack of Time and Work Constraints

For working-class parents, especially those in urban centers, long work hours and multiple jobs reduce the time they can dedicate to their children's educational development. This challenge is compounded by urban congestion and commuting issues, making it difficult for parents to attend school events or PTA meetings (Ige, 2011).

6. Institutional and Policy Challenges

Weak policy implementation and the absence of structured frameworks for parental engagement in many public schools in Nigeria. Many schools lack organized Parent-Teacher Associations or do not prioritize parental involvement in school governance (Olaniyan & Yahaya, 2016).

7. Gendered Responsibilities

In many households, parental involvement is perceived primarily as the mother's responsibility, while fathers are less engaged. This unequal distribution of roles limits the overall impact of parental support and reduces male involvement in education (Akinware, 2018).

Strategies to Promote Parental Involvement toward Educational Development for Transformative Education in Nigeria

Parental involvement is vital to achieving transformative education, which seeks to empower learners to think critically, engage actively, and contribute meaningfully to societal development. In Nigeria, where barriers such as poverty, illiteracy, and cultural beliefs limit parental engagement, implementing targeted strategies is essential to enhance parents' roles in educational development. The following strategies were discussed:

1. Strengthening Home-School Communication

Improving communication between schools and parents is key to fostering involvement. Schools should adopt multiple channels; such as phone calls, SMS, parent-teacher meetings, and community forums to ensure that parents are regularly informed and engaged (Ajayi et al., 2015). Regular and transparent communication helps build trust and encourages parents to participate actively in school affairs.

2. Parental Education and Sensitization Programs

Workshops, seminars, and community outreach programs can be organized to educate parents about the importance of their involvement in their children's education. These programs can also address harmful cultural practices and promote gender equity in educational support (Akinware, 2018). Literate and informed parents are more likely to support learning at

home and engage constructively with schools.

3. Flexible and Inclusive Participation Opportunities

To accommodate parents with demanding work schedules or limited literacy skills, schools can offer flexible participation options, such as weekend meetings, open days, or informal consultation hours. Inclusivity also means creating safe and welcoming environments where both fathers and mothers feel comfortable participating (Olaniyan & Yahaya, 2016).

4. Community-Based Engagement Models

Leveraging local community structures such as religious groups, town unions and CBOs can enhance parental involvement. Community leaders can help mobilize support and serve as liaisons between schools and families (Aluede & Afen- Akpaida, 2020).

5. Policy Reform and Institutional Support

Government policies should mandate and support parental involvement at all school levels. Strengthening the role of Parent- Teacher Associations (PTAs), ensuring parental representation on school boards, and integrating parental engagement into school improvement plans are important institutional measures (Adeniran, 2011).

6. Incentivizing Parental Involvement

Providing recognition or small incentives for active parents such as certificates, public acknowledgment, or leadership roles can motivate wider participation. This strategy is particularly useful in low- income communities where volunteerism may be limited by economic pressures (Ige, 2011).

7. Use of Technology and Media Radio programs, community theatre, social media platforms, and mobile learning tools can be used to engage and educate parents on how to support learning at

home. In areas with low literacy, visual and audio messages can bridge communication gaps and reinforce parental roles (Yusuf & Ajere, 2020).

Conclusion

In conclusion, parental involvement plays a vital role in supporting educational development and transforming Nigeria's education system through various activities like mentorship, spiritual guidance, and community engagement. It motivates learners and raises community awareness about education. However, factors such as low socioeconomic status, parents' limited education, cultural and religious beliefs, poor communication, time constraints, and gender roles hinder effective involvement. To address these challenges, the paper recommends improving home-school communication, offering parental education programs, creating flexible participation opportunities, encouraging community engagement, and implementing supportive policies.

Recommendations

From the discussions so far, the paper recommends that:

- 1) To improve parental involvement on educational development for transformative education, parents should be encourage to attend school meetings; teachers should also provide them with an opportunity to communicate their expectations and concerns.
- 2) Government should improve the free education policy in the state to ensure every child enroll into the educational system and ensure that the children accomplish their goals.
- 3) Teachers should not judge parents according to their inadequate level of education, low income status and should rather be submissive in the community.

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Technology integration in Higher Education Curriculum: Bridging Theoretical Foundations and Practical Challenges

By

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Abstract

This paper examines the theoretical foundations and practical considerations of technology-enhanced learning, drawing on key frameworks including constructivism, connectivism, TPACK, and activity theory to illuminate how digital tools can reshape teaching and learning processes. While technological integration offers significant benefits such as personalized learning, increased accessibility, and preparation for digital workplaces it also presents substantial challenges that institutions must address. These include persistent digital divides, staff resistance to adoption, data privacy concerns, questions about pedagogical effectiveness, and the financial sustainability of technological investments. The paper argues that successful implementation requires more than technical infrastructure; it demands careful alignment with pedagogical goals, comprehensive staff development, and equitable access strategies. Through analyzing these issues through multiple theoretical lenses, the study provides a nuanced understanding of how higher education institutions can navigate digital transformation while maintaining educational quality and inclusivity. The discussion highlights the need for curriculum designs that leverage technology to foster active learning, collaboration, and critical thinking while addressing systemic barriers to implementation.

Keywords: *technology integration*, higher education, curriculum design, digital pedagogy, educational technology

Introduction

The integration of technology into higher education curricula has become an imperative in the 21st century, driven by rapid digital transformation across all sectors, the effective incorporation of digital tools presents both unprecedented opportunities and significant challenges for teaching and learning (Selwyn, 2019). This paper examines the theoretical foundations and practical considerations of technology-enhanced learning in higher education, drawing on key frameworks including constructivism (Piaget, 1950; Vygotsky, 1978), connectivism (Siemens, 2005), and the Technological Pedagogical Content Knowledge (TPACK) model (Mishra & Koehler, 2006). While technology offers transformative potential

through personalized learning, increased accessibility, and preparation for digital workplaces (World Economic Forum, 2020), its implementation faces substantial barriers. These include persistent digital divides (UNESCO, 2021), faculty resistance to adoption (Henderson et al., 2017), and concerns about pedagogical effectiveness (Kirkwood & Price, 2016). The COVID-19 pandemic further highlighted both the necessity of digital learning solutions and the inequalities in their access and implementation (Dhawan, 2020).

This paper argues that successful technology integration requires more than technical infrastructure; it demands careful alignment with pedagogical goals, comprehensive faculty development, and equitable access strategies. By scrutinizing these issues through multiple

theoretical lenses, the study provides a framework for institutions navigating digital transformation while maintaining educational quality and inclusivity.

Integration of Technology in Higher Education Curriculum

The digital revolution has transformed education, making technology integration a critical component of modern curricula. E-learning platforms, artificial intelligence (AI), and virtual reality (VR) are reshaping teaching and learning processes (Bates, 2019). However, challenges persist in this domain. One significant issue is the digital divide, where socio-economic disparities limit access to technology for marginalized students (Selwyn, 2019). This gap exacerbates inequalities in educational outcomes, as students without reliable internet access or modern devices struggle to keep pace with their peers.

Another challenge is staff resistance to adopting new technologies. Many educators hesitate to integrate digital tools due to a lack of training or skepticism about their pedagogical efficacy (Henderson et al., 2017). This reluctance can stem from institutional inertia or a preference for traditional teaching methods. Additionally, ensuring the quality and effectiveness of digital learning tools remains a concern. While technology offers innovative ways to engage students, not all digital platforms are pedagogically sound, and their misuse can hinder rather than enhance learning (Kirkwood & Price, 2016).

Theoretical Foundations for Technology Integration in Higher Education Curriculum

The integration of technology in higher education curricula draws upon several foundational learning theories that provide a

framework for understanding how digital tools can enhance teaching and learning processes.

Constructivist theory, particularly the work of Piaget (1950) and Vygotsky (1978), forms a crucial theoretical basis by emphasizing active knowledge construction through interaction with the environment and social collaboration. In the digital age, this translates to technology-mediated learning environments where students engage with multimedia content, participate in online discussions, and collaborate on virtual projects, thereby constructing knowledge through meaningful interactions (Jonassen, 1999). Connectivism, a more contemporary theory developed by Siemens (2005), specifically addresses learning in the digital era by recognizing knowledge as a networked phenomenon. This theory posits that learning occurs through connections formed between information sources, and that the ability to navigate and utilize these networks is a critical skill. In higher education, this theoretical perspective supports the integration of technologies like learning management systems, social media platforms, and open educational resources that facilitate networked learning and information sharing (Downes, 2010). Connectivism provides particular relevance for curriculum design in preparing students for a knowledge economy where information is abundant and rapidly evolving.

The Technological Pedagogical Content Knowledge (TPACK) framework, developed by Mishra and Koehler (2006), offers another crucial theoretical lens by emphasizing the intersection of technological knowledge, pedagogical knowledge, and content knowledge. This framework suggests that effective technology integration requires

educators to develop competence in all three domains simultaneously. The TPACK model has significant implications for staff development programs and curriculum design, as it highlights the need for comprehensive training that goes beyond mere technical skills to include pedagogical strategies for specific disciplines (Voogt et al., 2013).

Social presence theory, originating from the work of Short, Williams, and Christie (1976) and later expanded by Garrison, Anderson, and Archer (2000) in their Community of Inquiry framework, provides theoretical support for technology-mediated collaborative learning. This theory emphasizes the importance of establishing social presence in online environments to facilitate meaningful educational experiences. Digital tools that enable video conferencing, asynchronous discussions, and collaborative document editing can help create this necessary social presence, which is particularly relevant in blended and fully online learning environments (Lowenthal & Snelson, 2017).

The diffusion of innovations theory (Rogers, 2003) helps explain the adoption patterns of educational technologies within higher education institutions. This theory identifies factors that influence how new technologies spread through social systems, including relative advantage, compatibility, complexity, trialability, and observability. Understanding these factors is crucial for successful implementation of technological innovations in curriculum development, as it helps predict and address potential resistance among staff and students (Surry & Ely, 2007).

Activity theory, derived from the work of Engeström (1987), provides a holistic

framework for analyzing technology-mediated learning activities by considering the interactions between tools, subjects, objects, rules, community, and division of labor. This theoretical perspective is particularly valuable for examining how technology transforms traditional educational practices and creates new possibilities for teaching and learning (Uden, 2007). Activity theory helps curriculum designers consider not just the technological tools themselves, but the entire ecosystem in which they are implemented.

These theoretical foundations collectively provide a robust framework for understanding and guiding the integration of technology in higher education curricula. They emphasize the importance of considering cognitive processes, social interactions, pedagogical strategies, and institutional contexts when implementing technological innovations. By grounding technology integration in these established theories, educators and curriculum designers can make more informed decisions that enhance learning outcomes while addressing the challenges of digital transformation in higher education.

The Importance of Integrating Technology in Higher Education Curriculum

The integration of technology into higher education curricula is no longer optional but a necessity in the 21st century. As digital transformation reshapes industries and societies, educational institutions must adapt to prepare students for a technology-driven world. The incorporation of digital tools enhances learning experiences, fosters accessibility, and bridges gaps between theoretical knowledge and practical application (Bates, 2019).

One of the most significant benefits of

technology in education is the facilitation of flexible and personalized learning. Learning Management Systems (LMS) such as Moodle, Blackboard, and Canvas allow students to access course materials, submit assignments, and engage in discussions at their convenience (Martin & Bolliger, 2018). For instance, during the COVID-19 pandemic, universities worldwide relied on these platforms to ensure continuity in education, demonstrating their critical role in crisis response (Dhawan, 2020). Additionally, adaptive learning technologies, such as AI-powered tutoring systems, tailor instruction to individual student needs, improving comprehension and retention (Luckin et al., 2016).

Another key advantage is the enhancement of student engagement through interactive and immersive learning tools. Virtual Reality (VR) and Augmented Reality (AR) are revolutionizing fields such as medicine, engineering, and architecture by providing hands-on simulations. For example, medical students at institutions like Stanford University use VR to practice complex surgeries in a risk-free environment, significantly improving their clinical skills (Barteit et al., 2021). Similarly, gamification (integrating game-like elements into learning) has been shown to increase motivation and participation, as seen in platforms like Duolingo for language learning (Deterding et al., 2011). Technology also plays a pivotal role in promoting equity and accessibility in higher education. Open Educational Resources (OER), such as MIT Open Course Ware and Khan Academy, provide free access to high-quality learning materials, reducing financial barriers for students (Wiley et al., 2014). Furthermore, assistive technologies,

including screen readers and speech-to-text software, enable students with disabilities to participate fully in academic activities (Seale, 2017).

Interdisciplinary Approaches in Curriculum Design

The complexity of modern problems such as climate change, public health crises, and technological disruptions requires interdisciplinary solutions. However, traditional curricula often remain siloed within rigid disciplinary boundaries, limiting students' ability to tackle complicated challenges (Klein, 2010).

Institutional structures frequently discourage cross-departmental collaboration, as academic departments operate independently with little incentive to work together. This fragmentation is compounded by a lack of staff expertise in interdisciplinary teaching. Many educators are trained within narrow disciplinary frameworks and may lack the skills or confidence to design and deliver interdisciplinary courses. Furthermore, accrediting bodies often favor traditional disciplinary programs, creating additional barriers to curricular innovation.

Equity and Accessibility in Higher Education

Despite global efforts to democratize education, disparities persist based on socio-economic status, gender, and geographic location (UNESCO, 2020). Financial barriers remain a significant obstacle, as high tuition fees exclude low-income students from accessing higher education (Johnstone & Marcucci, 2010). This issue is particularly acute in developing countries, where limited public funding for education exacerbates inequality.

Cultural and linguistic exclusion is another pressing concern. Curricula often reflect

dominant cultural narratives, marginalizing minority groups and indigenous knowledge systems (Banks, 2016). This lack of representation can alienate students from non-dominant backgrounds and undermine their academic success. Additionally, many institutions fail to provide adequate support for students with disabilities, further limiting accessibility (Shakespeare, 2018). To promote equity, HEIs should implement need-based scholarships and expand the use of open educational resources (OER), which reduce financial burdens. Adopting culturally responsive pedagogy can help create more inclusive learning environments, while universal design for learning (UDL) principles can enhance accessibility for students with disabilities.

Employability and Curriculum Alignment

Employers increasingly demand graduates with not only academic knowledge but also soft skills such as critical thinking, communication, and adaptability (World Economic Forum, 2020). However, many curricula remain theory-heavy, neglecting the practical competencies needed in the workforce.

A significant issue is the mismatch between academic training and industry needs. Many programs focus on rote memorization and standardized testing rather than fostering real-world problem-solving skills. Insufficient internship and experiential learning opportunities further exacerbate this gap, leaving graduates unprepared for the demands of the job market.

To align curricula with employability, HEIs should strengthen partnerships with industry leaders to ensure that programs reflect current workforce demands. Integrating work-based

learning, such as internships and apprenticeships, into curricula can provide students with hands-on experience. Emphasizing competency-based assessments over traditional exams can also help bridge the theory-practice divide.

Globalization and Curriculum Internationalization

Globalization necessitates curricula that prepare students for cross-cultural collaboration and global citizenship (Knight, 2008). However, this process is not without challenges. One issue is the dominance of Western knowledge systems in higher education, which often marginalizes indigenous perspectives (Odora Hoppers, 2009). This imbalance can perpetuate cultural hegemony and limit the diversity of thought in academic discourse. Another concern is the phenomenon of brain drain, where internationalization efforts lead to talent migration from developing nations. While studying abroad can benefit individual students, it may also deprive their home countries of skilled professionals. Additionally, balancing global benchmarks with local relevance is a complex task. Institutions must pilot the tension between adopting international standards and addressing region-specific educational needs.

Higher education institutions should promote multicultural education that values diverse knowledge systems. Developing joint degree programs with international institutions can enhance global collaboration while mitigating brain drain. Incorporating global challenges, such as sustainability and social justice, into curricula can also foster a sense of global responsibility among students.

Curriculum Rigidity and Pedagogical Innovation

Traditional curricula often resist change due to bureaucratic inertia and resistance from stakeholders (Trowler, 2015). Outdated pedagogical methods, such as lecture-based teaching, hinder student engagement and limit the development of critical thinking skills. Higher education institutions should adopt learner-centered approaches, such as flipped classrooms and project-based learning. These methods encourage active participation and foster deeper understanding. Continuous curriculum reviews can ensure that programs remain relevant and responsive to societal changes. Additionally, providing staff with professional development opportunities in innovative teaching strategies can help modernize pedagogical practices.

Other concerns in Integrating Technology into Higher Education Curricula

While the integration of technology in higher education offers numerous benefits, several significant concerns must be addressed to ensure its effective implementation. These challenges, if left unresolved, can hinder the potential of digital tools to enhance learning and may even exacerbate existing inequalities in education.

One primary concern is the digital divide, which refers to disparities in access to technology among students. Socioeconomic factors often determine whether learners have reliable internet connectivity, modern devices, or even a conducive environment for online learning (Selwyn, 2019). For example, students from low-income backgrounds or rural areas may struggle to participate in virtual classes due to inadequate infrastructure, placing them at a disadvantage compared to their peers. This

divide not only affects academic performance but also perpetuates systemic inequities in education.

Another critical issue is staff resistance to adopting new technologies. Many educators hesitate to incorporate digital tools into their teaching due to a lack of training, fear of technical difficulties, or skepticism about the pedagogical value of such innovations (Henderson et al., 2017). For instance, some professors may prefer traditional lecture-based methods over interactive platforms like Zoom or Google Classroom, limiting opportunities for student engagement. Without proper professional development and institutional support, staff members may struggle to adapt, resulting in inconsistent or ineffective use of technology in the classroom. Data privacy and security also pose significant challenges because increasing reliance on digital platforms raises concerns about the protection of sensitive student information. Universities must navigate complex ethical and legal landscapes to safeguard data from breaches or misuse (Regan & Jesse, 2019).

Moreover, the quality and effectiveness of digital tools remain a pressing issue. Not all technological solutions are pedagogically sound, and their misuse can lead to superficial learning experiences (Kirkwood & Price, 2016). For example, simply uploading lecture slides to an online platform does not equate to meaningful learning; instead, it may foster passive engagement.

Lastly, the rapid obsolescence of technology presents a logistical and financial challenge. Higher education institutions must continuously invest in updating hardware, software, and training to keep pace with technological advancements.

Conclusion

The integration of technology into higher education curricula represents a pivotal transformation in modern pedagogy, offering both unprecedented opportunities and significant challenges. As this paper has demonstrated, theoretical frameworks such as constructivism, connectivism, and the TPACK model provide essential foundations for understanding how technology can enhance learning experiences, foster collaboration, and prepare students for a digitally-driven workforce. However, the effective implementation of these technologies requires more than just technical adoption; it demands a holistic approach that considers pedagogical alignment, institutional readiness, and equitable access. The persistent digital divide remains a critical barrier, underscoring the need for policies that ensure all students have access to necessary resources and support. Staff resistance, often rooted in inadequate training or skepticism about pedagogical value, highlights the importance of comprehensive professional development programs. Additionally, concerns about data privacy, the quality of digital tools, and the financial sustainability of technological investments must be addressed to create sustainable and inclusive learning environments. Moving forward, higher education institutions must adopt a strategic and reflective approach to technology integration. This involves aligning digital tools with curricular goals, fostering a culture of innovation, and prioritizing equity to ensure that all students benefit from technological advancements. By doing so, institutions can harness the full potential of technology to enhance teaching and learning while preparing

students for the complexities of the 21st century.

Ultimately, the successful integration of technology in higher education will depend on balancing innovation with thoughtful implementation, ensuring that technology serves as a catalyst for educational excellence rather than a source of division.

Recommendations

- To effectively integrate technology into higher education, institutions should prioritize staff development and equitable access. Comprehensive training programs must equip educators with both technical skills and pedagogical strategies, while bridging the digital divide through subsidized devices, campus tech hubs, and universal design principles. A strategic, pedagogically driven approach ensures tools align with learning outcomes and undergo rigorous evaluation before adoption.
- Curriculum redesign should emphasize active, technology-enhanced learning, replacing passive content with interactive simulations, collaborative projects, and AI-powered assessments.
- Partnerships with industry can enhance relevance, providing students with real-world tool and internship opportunities. Simultaneously, robust data governance frameworks must safeguard student privacy and ensure ethical technology use.
- Sustainable implementation requires long-term planning and iterative improvement. Institutions should secure diversified funding, pilot initiatives before scaling, and regularly assess impact through analytics and stakeholder feedback.
- By fostering a culture of innovation and accountability, higher education can harness technology's potential while maintaining inclusivity and educational

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Enhancing Secondary School Student's Academic Achievement and Perception in Ecology Concept Using JIGSAW II Learning Strategy in Dambatta Education Zone, Kano State Nigeria

By

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Abstract

The aim of this paper is to examine the Effect of Using JIGSAW II Learning strategy on Academic Achievement and Perception toward learning Ecology concept among Secondary School students (SSS) in Dambatta Education Zone Kano State. The study was guided by three research questions. The research design was quasi-experiment non-randomized pretest posttest control group. The population of the study was made of 5160 SSS from which sample of 134 students were selected using stratified random sampling technique. The data were collected with Ecology Achievement Test (EAT) and Students Perception of Ecology Questionnaire (SPEQ). The reliability of the instruments was determined using test-retest technique and Cronbach's Alpha was used to obtain reliability coefficient ($r = 0.81$) for the instruments. The statistical tools for data analysis were mean, standard deviation and Independent t-test. The results revealed that there is no significant difference between male and female students in academic achievement and perception scores when taught Ecology with Jigsaw II learning strategy. Based on the findings it is concluded that JIGSAW II Learning strategy raises the level of students' academic achievement in ecology concepts. Therefore, it is recommended that biology teachers should be encouraged to use Jigsaw II learning strategy to teach Ecology in Senior Secondary Schools

Keywords: *Jigsaw II learning strategy, Achievement, Perception, & Gender*

Introduction

Biology, has a direct link with science subjects like Agriculture, chemistry, physics, geography and mathematics and this relationship is directly associated with nature of its branches which include botany, zoology, ecology, evolution, morphology, anatomy, physiology, histology, microbiology, biochemistry, genetics, cell biology, molecular biology among others. Biology also has wider inter-disciplinary applications, it is applied in medicine, pharmacy, food production and processing, biotechnology, agriculture and horticulture, genetic engineering, environmental protection, tourism industries (Osuafor and Awosika, 2020). Biology teachers use practical activities to explain various biological concepts, theories and process which enable students to understand different branches

of biology and their relationship with each other (Ghumdia and Adams 2020). Ecology as a branch of biology refers to the study of relationship between living organisms with each other and their physical environment such as water, air, soil, temperature, sunlight, salinity and pH. Ecology is one of the major components of biology curriculum at secondary schools Nigeria. Analysis of secondary school certificate examination (WAEC and NECO) biology past question papers indicated that several questions are asked on ecological concepts in both paper I, II and III. Therefore, poor students' academic performance in biology might be associated with poor understanding of ecological concepts due to persistent use of conventional method of teaching. Hence, this study intends to use one of the innovative instructional strategies such as Jigsaw

II learning strategy to whether students' academic achievement and perception would be improved.

Jigsaw II learning strategy is an instructional strategy in which a small group of students with different ability levels, use variety of learning activities to improve their understanding of a lesson. The Jigsaw II cooperative learning strategy is an efficient way for students to learn classroom material. The process encourages students to listen and be engaged in a group setting. Just like a jigsaw puzzle, each member of the group plays an essential role in their group. What makes this strategy so effective is that group member work together as a team to achieve a common goal. Students are not able to succeed unless everyone works together (Kelly, 2021). In this strategy, each student is a member of two groups (jigsaw or home group and an expert group). In the jigsaw or home group, students are assigned separate portions of the material to be learnt. Each member in the home group is asked to focus on reading one portion of the material. Upon finishing the reading, students who read the same portion of the material come together to form an expert group to discuss their assigned portion. After the discussion, group members go back to their home group to teach what they have learnt in their expert group to other members. After mastering all the sub-topics taught by each expert, individual group members take a short quiz. Individual score is compared with the base score to calculate the individual improvement score, based on which a group's average improvement score is worked out. The group having the

highest average group improvement score is given group recognition by getting a group reward. Alternatively, a group which has its average group improvement score reaching a pre-determined level can receive a group reward. Thus, each member learns and helps his mates to learn since the success of a group member is the success of all members. Therefore, jigsaw II co-operative which makes and work together a way of life among students.

Jigsaw II learning strategy is an instructional strategy in which a small group of students with different ability levels, use variety of learning activities to improve their understanding of a lesson. The Jigsaw II cooperative learning strategy is an efficient way for students to learn classroom material. The process encourages students to listen and be engaged in a group setting. Just like a jigsaw puzzle, each member of the group plays an essential role in their group. What makes this strategy so effective is that group member work together as a team to achieve a common goal. Students are not able to succeed unless everyone works together (Kelly, 2021). In this strategy, each student is a member of two groups (jigsaw or home group and an expert group). In the jigsaw or home group, students are assigned separate portions of the material to be learnt. Each member in the home group is asked to focus on reading one portion of the material. Upon finishing the reading, students who read the same portion of the material come together to form an expert group to discuss their assigned portion. After the discussion, group members go back to their home group to teach what they have learnt in. their expert group to other members. After mastering all the sub-topics taught by each expert, individual group members take a short quiz. Individual score is compared with the base score to calculate the

individual improvement score, based on which a group's average improvement score is worked out. The group having the highest average group improvement score is given group recognition by getting a group reward. Alternatively, a group which has its average group improvement score reaching a pre-determined level can receive a group reward. Thus, each member learns and helps his mates to learn since the success of a group member is the success of all members. Therefore, jigsaw II co-operative higher than the girls when taught using Jigsaw

Students' perception of learning biology refers to how students see or perceived the development of biology learning and the problems hindering effective learning of the subject in secondary schools. Agboghroma and Oyovwi (2019) identified ecology, evolution, genetics, conservation of natural resources, energy transformation in nature, and variation in population, as perceived difficult biology topics to learn by students. Thus, Agboghroma, and Oyovwi, (2019) observed poor teaching method, some topics are not well taught, inadequate learning materials, poor competent professional biology teachers and limited time allotted the subject are the reasons why some topic perceived to be difficult. Therefore, Experiencing difficulties in learning certain topics in biology negatively affect students' motivation and achievement (Omajuwa, 2020).

Gender has continued to be an issue of concern to education sector. Gender is the wide set of characteristics that distinguish males from females and it extends from sex to social role or gender identity (Mbacho, 2021). Ibrahim and Dazi

(2023) Opined that gender is the personality traits, attitudes, behaviors, values, relative power, influence, roles and expectation (femininity and masculinity) that society ascribes to the two sexes on a differential basis. Some Studies revealed that males outperformed females in achievement, while other studies reported opposite. Some studies on other hand disclosed that there was no significant gender difference in the students' academic performance in various science subjects (Gambari, Obielodan & Kawu, 2019; Costouros, 2020; Margas, 2023). Therefore, understanding secondary school student's perception of biology will help curriculum planners, teachers, researchers and educationists, to plan more effective teaching strategy that can help students to learn biology better, and have more positive attitude toward it. So, the aim of this study is to determine the Effects of Jigsaw II learning strategy on academic achievement and perception in ecology among secondary school students in Danbatta Education Zone Kano state, Nigeria

Statement of the Problem

Biology is one of the important science subjects instructed in both secondary schools and tertiary institutions in Nigeria. Despite its importance and popularity among students, the poor performance of students in the subject in West African examinations has remained unchanged and persistent in the study area. Furthermore, the chief examiner's reports show that biology students are could not answer questions related to genetics, evolution, ecology and nutrient cycles. Studie by FOyovwi and Agboghroma, (2020) indicated that biology students experience difficulty in learning ecological concepts. These may be part of the reasons for the poor performance of students in biology. The researcher tends to agree with a few other researchers who have

stood firm to accept that the problem lies with the teaching methods, strategies, and approaches. Moreover different researchers used innovative instructional strategies, such as guided inquiry, concept mapping, and field trips, among others, to teach biology that have been carried out in some topics and in some states in Nigeria. But rarely has any been done on Biology in Senior Secondary One (SS1) in the Danbatta Education Zone, Kano State, Nigeria. This is the gap this study was intended to fill.

Research Questions

The study is aimed at finding answers to the following research questions;

1. Is there any significant difference between the mean Perception scores of students taught Ecology using Jigsaw II Learning Strategy?
2. Is there is any significant difference between the mean academic achievement scores of male and female students taught Ecology using Jigsaw II Learning Strategy?

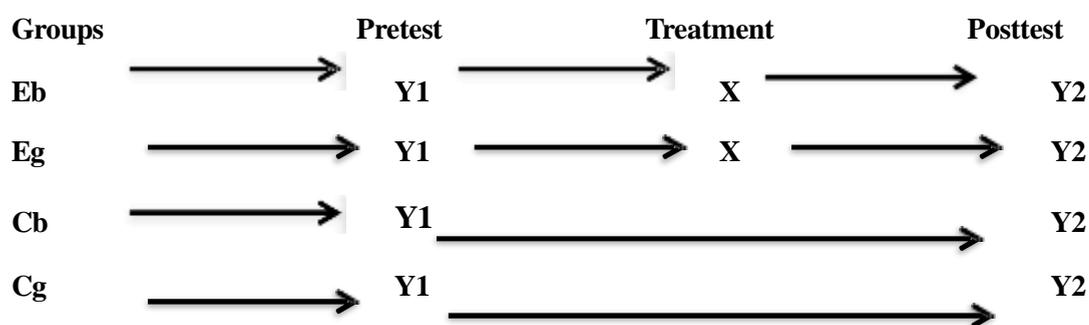
3. Is there any significant difference between the mean Perception scores of male and female students taught Ecology using Jigsaw II Learning Strategy?

Methodology

The research design was quasi-experiment non-randomized control group pretest posttest. A Pretest was administered to both experimental and control groups (intact classes from two boys’ and two girls’ schools). After the treatment on experimental group, a posttest was administered to both the experimental and control groups.

Figure 1:

Non Randomized Control Group Pretest Posttest Design



Key: Eb experimental group boys, Eg experimental group girls, Y1 pretest, X treatment (JIGSAW II Learning Strategy) and Y2 Posttest

The population of the study was made of 5160 (SS1) Senior Secondary School students of Dambatta Education Zone. The population was distributed among 50 secondary schools within the zone and 3690 students were from boys' and 1470 students from girls' schools respectively. A multi-stage stratified random sampling technique was used in selecting two boys' and two girls' schools from the main population in each of the four selected schools, one intact class offering biology subject was randomly selected and out of which two classes (one boys' and the other girls') were assigned to experimental group and same to control group. These collectively gave the sample size of 134 students.

Two instruments were used for data collection in the study: The Ecology Achievement Test (EAT) was adapted from senior secondary school certificate examinations (WAEC and NECO). It consisted of 20 multiple choice questions with four options lettered A-D. Student's Perception of Ecology Questionnaire (SPEQ) was the second instrument and was adapted from Ling's Xuans (2015) study titled Application of Cooperative Learning Approach: Teacher and Students Perception toward Cooperative Learning in State University New York. It consisted of 15 items based on Likert scale with five options of strongly agree (SA), agree (A), undecided (U), disagree (D) and strongly disagree (SD). The rating scale was SA=5, A=4, U=3, D=2 and SD=1. Based on the rating scale, a decision rule of 3.00 was used to accept or reject an item.

The instruments were validated by jury of five experts and the reliability of the instruments were determined through test- retest technique which was administered twice on the same group

of students with difference of two weeks between the first and the second administration. The Cronbach's alpha statistical tool was used to analyze the results and reliability coefficient ($r=0.81$) was obtained for each one of the instrument.

Treatment for the Experimental and Control Groups

Before the treatment in the experimental group, pretest results, continuous assessment and terminal exam results were used to place students into three ability groups: high, medium and low groups. The lesson content was divided into six units and each group was given time to study one unit. Then six temporary expert groups containing Six students each, one representative from each home group. The students in the expert groups discussed and shared ideas among themselves. At the end all the students returned to their initial home groups. At home group students were encouraged to collaborate, discuss, ask questions and solve problems under the supervision of the teacher. At the end of the sessions, posttest and perception questionnaire were administered to the students. Before the treatment in the control group, pretest was administered. Conventional Lecture method was employed to teach the same topics on ecology as those taught the experimental group. The teacher used talk and chalk to deliver the content and finally gives the note to students. Finally, an

Table1

Number of students in the Jigsaw II groups

Achievement test (posttest) was administered to the group. The lesson for both experimental and Control groups lasted for six weeks

Home Groups		Expert Groups	
Group A Students	1, 2, 3,4,5,6.	Group A Student	1, 1,1,1,1.1
Group B Students	1, 2, 3,4,5,6.	Group B Students	2, 2, 2,2,2,2
Group C Students	1, 2, 3,4,5,6.	Group C Students	3, 3, 3, 3, 3.,3
Group D Students	1, 2, 3,4,5,6.	Group D Students	4, 4, 4, 4, 4.4
Group E Students	1, 2, 3,4,5,6.	Group E Students	5, 5,5,5,5.5
Group F Students	1,2,3,4,5 ,6,	Group F Students	6,6,6,6,6,6
TOTAL:	36	TOTAL:	36

Results

Question 1: Is there any significant difference between the mean scores of students taught Ecology concepts using **Table 2**

Jigsaw II Learning Strategy and those taught using conventional method?

Analysis of Covariance of Post-Test Mean Achievement Scores of Students between the Experimental and Control Groups

Group	N	Mean	MD	S.D	DF	t-cal.	P-value	Decision
Experimental	66	21.32	5.37	3.64				Reject H0
Control	68	15.95		2.70	132	9.70	0.00	

Alpha level of significance =0.05

Table 2 shows that post-test mean achievement scores of the experimental group is higher than that of control group 15.95 and the mean difference 5.37 indicates that difference exists between the two groups. Furthermore, the P-value 0.000 is less than the alpha level of significance 0.05. This indicates that there is significant difference between the mean achievement scores of secondary school Biology

students taught using Jigsaw II learning strategy and conventional method of teaching in favor of experimental group.

Question 2: Is there is any significant difference between the mean academic achievement scores of male and female students taught Ecology using Jigsaw II Learning Strategy

Table 3

Independent, t-test of Male and Female Students Posttest Mean Achievement Scores of the Experimental Group

Gender	N	Mean	MD	S.D.	df	t-cal	p-value	Decision
Male	36	21.13	0.43	3.82				Retain H0
Female	30	20.70		3.37	64	1.26	0.13	

Alpha level of significance =0.05

From Table 3, the observed mean value 21.13 of the male is slightly higher than that of the females 20.70 and the mean difference 0.43 indicates a slight difference exists between the groups. Similarly, the p- value 0.13 is greater than the alpha level of significance 0.05. This confirm that there is no significant gender

difference in mean **Table 4** achievement scores of the secondary school Biology students when taught using Jigsaw II learning strategy.

Question 3: Is there any significant difference between the mean Perception scores of male and female students taught Ecology using Jigsaw II Learning Strategy?

Independent t-test of Mean Perception Scores of Male and Female Students in the Experiment Group

Gender	N	Mean	MD	S.D.	df	t-cal	p-value	Decision
Male	36	56.14	0.54	7.84				Retain H ₀
					64	0.27	0.79	
Female	30	55.60		8.21				

Alpha level of significance =0.05

The Table 4, Shows that the mean score 56.14 of the male is slightly higher than the mean score 55.60 of the females. The mean difference 0.54 indicates that the difference between the two groups is very small. Therefore, the P-value 0.79 is greater than the alpha level of significance 0.05. This shows that there is no significant difference between the mean perception scores of male and female Biology students in secondary schools when taught Ecology using Jigsaw II learning strategy.

Summary of the Findings:

Based on the outcome of the analysis, the followings are the major findings of this study:

1. There is significant difference between the means academic achievement scores of Biology students taught Ecology using Jigsaw II Learning Strategy.
2. There is no significant difference between the means academic achievement scores of male and female Biology students taught Ecology using

Jigsaw II Learning Strategy.

3. There is no significant difference between the means perception scores of male and female Biology students taught Ecology using Jigsaw II Learning Strategy.

Discussion of the Result

The finding in table1 of this study revealed that there was a significant difference in the mean academic achievement scores between Biology students taught Ecology using Jigsaw II learning strategy and those taught with conventional teaching methods. This implies that the use of Jigsaw

II learning strategy in teaching Ecology enhances students’ academic achievement. The finding agreed with the study of Adesoji, Omilani and Nyinemi (2023) that shows students learning activities based on Jigsaw II learning strategy have higher achievement than students who learned through the conventional method of teaching.

Similarly, table 2 results showed that there was no significant difference between the male and female mean achievement scores of biology students when exposed to Jigsaw II cooperative

learning strategy. The finding agreed with the work of Margas (2023) who reported that there was no significant gender difference in the students' academic performance in various science subjects.

This implies that students' performance could be equalized based on gender when innovative strategy such as Jigsaw ii learning are employed in teaching.

Table 4 also showed that there is no significant difference between the mean perception scores of biology students when exposed to Jigsaw II learning strategy. This observation pointed out clearly that those male and female Biology students learned ecology concepts using Jigsaw II learning strategy have similar performance. This finding was supported by the findings of Saffkolam and Sari (2023). The result indicated that Jigsaw II learning strategy gave both male and female students equal opportunity to actively participate in the lesson. However, this results contradicted with the studies of Mbacho(2021); Ibrahim and Dazi (2023) that showed there was significant difference between male and female students.

Conclusions

Based on the findings of this study, the following conclusions were made:

1. The Jigsaw II learning strategy increase Student's academic achievement and perception level positively as indicated there is significant difference between pre- test and post-test of the students' academic achievement and perception scores in the experimental group.

2. The Jigsaw II learning strategy is a gender friendly teaching strategy with respect to the academic achievement and perception scores of biology students. This is because there was no significant difference in the mean perception

scores of male and female biology students exposed to Jigsaw II cooperative learning strategy.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. To ensure qualitative education, biology teachers should be trained on effective procedures for implementing jigsaw II learning strategy in their classrooms by organizing extensive seminars and workshops. This is because Jigsaw II learning strategy helps in improving students' academic achievement and perception level positively.

2. To ensure equal educational opportunity for both males and females, science teachers especially Biology teachers should be encouraged by government through ministry of education and other educational agencies to teach biology concepts with learning materials based on Jigsaw II leaning strategy. This is because Jigsaw II learning strategy improved students 'academic achievement and perception level positively of both males and females students.

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Roles of Adult Education Programmes in Promoting Health Awareness and Practices in Nigerian Communities

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Abstract

Health awareness and practices remain a critical concern in Nigerian communities due to high rates of maternal mortality, poor sanitation, and limited access to healthcare information. This Position paper, explores the role of adult education programmes in promoting health awareness and practices in Nigerian communities. Adult education programs such as literacy classes, community workshops, and outreach campaigns have proven effective in addressing these issues. For instance, in Kano State, adult literacy programs integrated with health education have improved maternal health outcomes, in Borno State, NGOs have used non-formal education platforms to promote hygiene practices in Internally Displaced Persons (IDP) camps, similarly in Sokoto State, community-based education initiatives have contributed to increased immunization rates and improved child healthcare. This the paper talk on how integrating health education into adult learning programs can address cultural barriers, improve knowledge on disease prevention, and promote healthier lifestyles. By equipping adults particularly women, with relevant knowledge and skills, therefore adult education programmes serve as a powerful tool for enhancing community well-being especially when health education is incorporated with health education. The paper concludes that adult education programs incorporated with health education tailored to the unique social and cultural context of northern Nigerian communities can significantly improve health outcomes and reduce preventable diseases

Keywords: *adult education, health awareness, communities.*

Introduction

Health awareness and practices are essential components of public well-being, playing a crucial role in reducing disease outbreaks, improving maternal and child health, and enhancing the overall quality of life. Globally, countries invest heavily in health education programs to promote preventive healthcare and encourage positive health behaviors. The World Health Organization (WHO 2013) emphasizes that improving health literacy that is the ability to access, understand, and apply health information, is a key, to achieving better health outcomes worldwide. In developed countries, adult education programs are integrated with healthcare services to educate individuals about healthy lifestyles, disease prevention, and access to healthcare resources. For example, in the United States, community- based workshops and digital learning platforms have successfully

improved awareness of chronic disease management. Similarly, in European countries, adult literacy classes have integrated nutritional education, mental health awareness, and hygiene promotion to enhance public health.

In Africa, countries such as Ghana, Kenya, and South Africa have adopted adult education strategies to promote health awareness. In these regions, adult education programs delivered through radio broadcasts, community meetings, and literacy classes have proven effective in addressing issues such as maternal health, HIV/AIDS prevention, and sanitation practices. In Nigeria, health-related challenges such as maternal mortality, poor sanitation, and limited access to healthcare information remain pressing concerns. According to Nigerian Demographic and Health Survey (NDHS, 2013), maternal mortality rates are among the highest in sub- Saharan Africa, with

Northern Nigeria contributing significantly to these figures. Factors such as low literacy rates, cultural beliefs, and limited access to healthcare services have hindered positive health behaviors in many regions.

To address these issues, the Federal Ministry of Health and the National Commission for Mass Literacy, Adult and Non-Formal Education (NMEC) have incorporated health education into adult learning programs. For instance, initiatives like the Family Life and Health Education Program (FLHE) focus on equipping adults with knowledge about reproductive health, sanitation, and disease prevention. The health situation in Northern Nigeria is particularly of great concern due to socio-cultural practices, poverty, and educational gaps. The region faces unique challenges such as high maternal mortality rates due to limited awareness about antenatal care and safe delivery practices (Audu et al., 2020). Poor hygiene and sanitation in densely populated areas and Internally Displaced Persons (IDP) camps, leading to frequent outbreaks of diseases such as cholera, and vaccine hesitancy and misconceptions about immunization in some communities, resulting in low vaccination rates are some of the challenges (Ibrahim & Yusuf, 2019).

Adult education programs in various Northern Nigerian states have played a significant role in promoting better health practices. In Kano State, adult literacy programs integrated with maternal health education have improved awareness about antenatal care and safe delivery practices (Audu et al., 2020). In Borno State, non-formal education campaigns in (IDP) camps have successfully taught displaced persons about proper hygiene practices, reducing the spread of communicable diseases (Ibrahim & Yusuf, 2019). In

Sokoto State, community-based workshops led by religious leaders have encouraged parents to embrace immunization, improving vaccination rates and Jigawa State, women's empowerment programs have fostered improved family health practices (Aliyu, 2021).

Adult education is a powerful tool for enhancing health awareness in Northern Nigeria, particularly because it targets marginalized groups such as rural dwellers, women, and individuals with limited formal education. By integrating health education into literacy programs, workshops, and community meetings, adult education can address cultural misconceptions, improve healthcare practices, and ultimately reduce preventable diseases. This study seeks to explore how adult education programs contribute to improving health awareness and practices across Northern Nigerian communities. The paper highlighted successful strategies, identify existing challenges, and provide recommendations for enhancing adult education initiatives to improve health outcomes.

Concept of Adult Education

The term adult education means many things in different contexts and different period. Adult education today is not the same as in the earlier years. UNESCO noted essentially that adult education is closely related to the social, political and cultural condition of each country, that no uniform or precise definition can be arrived at even within one country, different writers use the term to mean different thing. In defining the term adult education there is need to define adult and education separately. An adult is one who physically and psychologically matured and is socially, economically and politically responsible Nzeneri (2012). UNESCO Institute for Statistics (2020), opined that, Adult education targets

individuals regarded as adults by their society to improve technical or professional qualifications, further developed abilities, enrich knowledge, complete formal education levels, or acquire new skills. It includes continuing, recurrent, or second-chance education.

Okediran and Sarum (2001) opined that, Adult Aducation should be seen as the provision of resources and support for self- directed learning irrespective of age, adult education should be distinguished from schooling within the overall concept of lifelong learning. The emphasis should be the cultivation of total man, whose educational needs goes beyond cognitive knowledge but to other areas of human endeavour.

According to Merriam and Brockett (2001), Adult education is virtually any activity for adult, designed to bring about learning which according to them include the work of aerobics instructors, nurse, private consultants, literacy worker and community activity.

Nzeneri (2002) defined adult education as any education given to adult base on the social, economic, political and cultural need to enable them adjust fully to change and challenges in their lives and society.

Concept of Awareness

Awareness refers to the state of being conscious or informed about a particular issue, concept, or situation. It involves recognizing, understanding, and interpreting information or events. Awareness is crucial in various fields such as education, health, social change, and community development.

In the context of Adult and Non-Formal Education (ANFE), awareness plays a significant role in influencing learners' attitudes, behaviour, and decisions. For instance, awareness programs can

enhance knowledge about health, literacy, and social issues, empowering individuals to make informed choices or decision.

Dourish and Belloti (1992) define awareness as an understanding of the activities of others, which provides a context for your own activity. This concept of awareness emphasizes how individuals remain informed about what others are doing in collaborative setting, particularly in human-computer interaction and computer-supported co-operative work (CSCW). Reinhardt et al. (2012) expanded this concept in the context of knowledge work and social media, emphasizing that Awareness in collaborative environments also involves being informed about others knowledge, intensions, goals, and changes in shared environments, facilitated by digital tools.

UNESCO, (2009) Defined Awareness in adult and non-formal education as raising consciousness about issues such as health, civic rights, gender equality, environment, and social responsibilities, which enables adult learners to take informed actions in their communities

Types of Awareness

- i. **Cognitive Awareness:** Refers to an individual's understanding, perception, and knowledge about a particular subject. Example: In an Adult Education programme, cognitive awareness may involve understanding the importance of literacy in improving daily life (Merriam & Bierema, 2014).
- ii. **Emotional Awareness:** Refers to recognizing and understanding one's own emotions and those of others. Example: In community learning programmes, emotional awareness helps participants develop empathy and improve interpersonal skills (Goleman, 2006).
- iii. **Social Awareness:** Involves recognizing social issues, cultural norms, and community dynamics.

Example: Adult learners may become more aware of social inequalities, encouraging them to engage in advocacy or leadership (Brookfield, 2012).

- iv. **Health Awareness:** Focuses on understanding health-related issues and adopting healthy behaviours. Example: Non-formal education programmes in Northern Nigeria often target maternal health awareness to reduce maternal mortality rates (Adereti et al., 2014; NMEC, 2008).
- v. **Environmental Awareness:** Involves understanding environmental issues and promoting sustainable practices. Example: Adult education campaigns may teach communities about waste management and environmental conservation. (Ngurukwem *et al.*, 2023)

Concept of Health Practices

Health practices refer to actions, behaviours, and habits that individuals adopt to maintain, improve, or restore their health. These practices are influenced by cultural beliefs, knowledge, social norms, and environmental factors (World Health Organization [WHO], 2010). In the context of Adult and Non-Formal Education, promoting positive health practices is essential for improving community well-being, particularly in regions with limited access to formal healthcare services.

Types of Health Practices

Health practices can be categorized into various aspects that contribute to overall well-being:

- i. **Preventive Health Practices:** These are actions taken to prevent illness or detect health conditions early. Examples include vaccination, regular exercise, balanced nutrition, personal hygiene, and health screenings. Preventive health practices

have been linked to improved maternal and child health outcomes in developing countries (Odetola, 2015).

- ii. **Curative Health Practices:** These involve seeking medical attention and adhering to prescribed treatments when illness occurs. Examples include taking medications as prescribed, undergoing surgery, and following recommended therapies. Adult education programs often emphasize the importance of seeking professional healthcare rather than relying solely on traditional remedies (Audu et al., 2013).
- iii. **Health-Seeking Behaviours:** This refers to how individuals respond to health challenges and their willingness to seek medical care. For instance, women's participation in maternal health education programs has been shown to improve their health-seeking behaviours (UNESCO, 2006).
- iv. **Traditional and Cultural Health Practices:** These practices are based on cultural beliefs and may involve herbal remedies, spiritual healing, or indigenous methods. While some traditional practices are beneficial, others may pose risks, making awareness campaigns essential in adult education (Ogunleye & Afolabi, 2017).
- v. **Rehabilitative Practices:** These involve actions taken to recover from illness, injury, or disability. Examples include physiotherapy, counselling, and lifestyle adjustments to promote recovery (WHO, 2010).

The Role of Health Practices in Adult and Non-Formal Education

Adult and Non-Formal Education (ANFE) programs play a vital role in promoting positive health practices through:

- i. Health Literacy:** Educating adults about the importance of nutrition, hygiene, and disease prevention.
- ii. Maternal Health Awareness:** Empowering women with knowledge about antenatal care, safe delivery practice, and child immunization.
- iii. Community-Based Health Interventions:** Mobilizing communities to adopt better sanitation practices, clean water usage, and proper waste disposal.
- iv. Behavioural Change Campaigns:** Addressing harmful cultural practices such as female genital mutilation (FGM), early marriage, and unsafe abortions.

Various approaches by which Adult Education addresses emerging health issues

- i. Health Literacy Programs:** Adult literacy programs have integrated health education into their curriculum to empower learners with essential knowledge. For instance, in Kano State, the Kano State Agency for Mass Education introduced maternal health education into adult literacy programs to promote safe delivery practices, family planning, and nutrition awareness (Audu et al., 2020). Women who attended these classes showed improved understanding of antenatal care, immunization, and hygiene.
- ii. Community-Based Workshops:** In Sokoto State, trained facilitators deliver health talks during market days, religious gatherings, and community festivals. These informal sessions have successfully improved vaccination rates and encouraged improved nutrition practices among families (Aliyu, 2021).
- iii. Peer Education Programs:** In rural areas of Kaduna and Katsina states, peer educators have been trained to promote awareness about

sexually transmitted infections (STIs), HIV/AIDS prevention, and maternal health. This approach has helped overcome cultural barriers by using trusted community members as educators. (UNICEF Nigeria 2023)

- iv. Media-Based Learning:** In Borno State, radio programs delivered in Hausa and Kanuri languages have been used to educate displaced persons in IDP camps on the importance of safe water practices, waste disposal, and disease prevention (Ibrahim & Yusuf, 2019). This approach ensures access to health information even in remote areas. In Jigawa State, adult education programs have trained women in basic healthcare practices. This initiative has empowered women to manage minor health issues, administer first aid, and promote family hygiene.

The Roles of Adult Education Programs in Promoting Health Awareness and Practices in Nigeria

Adult Education programs play a crucial role in enhancing health awareness and promoting positive health practices, particularly in Northern Nigerian communities where healthcare challenges are prevalent. These programs address issues such as maternal health, hygiene, disease prevention, and cultural practices that influence public health. Women benefit significantly by gaining knowledge on reproductive health, family planning, and maternal care, leading to better health outcomes for mothers and children. Adult education Promotes health awareness and practices by teaching adults important health information, improving their ability to read and understand medical instructions. And encouraging healthier behaviours, trains learners to become peer health educators and connects

communities with healthcare services. Through flexible, community-based methods like storytelling and outreach, adult education helps reduce disease and improve overall well-being in Nigerian communities.

- i. **Improving Health Literacy:** Adult education programs provide participants with essential knowledge about disease prevention, nutrition, sanitation, and hygiene. For example, literacy classes often include content on recognizing early symptoms of illnesses, understanding prescription instructions, and identifying healthy practices (UNESCO, 2006). Research shows that improved health literacy leads to better decision-making and healthier lifestyle choices (Odetola, 2015).
- ii. **Maternal and Child Health Awareness:** Adult education programs in Northern Nigeria have been instrumental in teaching women about antenatal care, safe childbirth practices, and the benefits of immunization. Studies highlight that women who participate in maternal health awareness programs are more likely to seek medical care during pregnancy and childbirth (Adu et al., 2013). These programs also address harmful cultural practices such as early marriage, female genital mutilation (FGM), and unsafe delivery methods (Ogunleye & Afolabi, 2017).
- iii. **Combating Misconceptions and Cultural Barriers:** In some Northern Nigerian communities, traditional beliefs and misconceptions often hinder the adoption of modern healthcare practices. Adult education programs create awareness campaigns that challenge harmful beliefs and encourage healthier alternatives. For instance, campaigns emphasizing the dangers of self-medication and the importance of professional medical care

have successfully changed health-seeking behaviors (Ibrahim et al., 2014).

- iii. **Promoting Environmental and Sanitation Practices:** Adult education programs promote community-based interventions for improving sanitation, clean water usage, and waste disposal. Programs train community members on the importance of washing hands, proper sewage management, and food safety, significantly reducing the spread of communicable diseases (WHO, 2010).
- iv. **Encouraging HIV/AIDS and Malaria Awareness:** In Northern Nigeria, where malaria and HIV/AIDS rates remain concerning, adult education programs have been key in sensitizing communities about prevention, symptoms, and treatment options. Awareness campaigns, often delivered in local languages, have increased participation in voluntary counselling, testing, and the use of insecticide-treated nets (Ajala et al., 2010).
- v. **Empowering Women and Vulnerable Groups:** Adult education programs target marginalized groups such as rural women, nomads, and persons with disabilities, equipping them with knowledge about reproductive health, nutrition, and personal hygiene. This empowerment improves family health outcomes and strengthens community development (Oduaran, 2000). Adult education creates several opportunities to promote better health practices such as:
 - i. **Empowering Women as Change Agents:** Educating women, especially mothers, significantly improves family health outcomes. Women who gain knowledge about nutrition, hygiene, and maternal care are more likely to apply these practices in their households, reducing child mortality rates.

ii. Training Community Health Educators: Adult education programs can train local residents as community health educators. These individuals serve as trusted sources of information, effectively addressing cultural myths and encouraging positive behavior change.

ii. Integrating Digital Learning Platforms: Leveraging technology through mobile applications, social media campaigns, and online classes offers an opportunity to expand access to health education, particularly for younger adults and urban populations.

iii. Collaboration with Religious and Traditional Leaders: Working with traditional and religious leaders has proven effective in promoting health education in Northern Nigerian communities. By integrating health messages into sermons, public talks, and community events, these leaders can influence behavioral change.

Challenges of Adult Education Programs in Promoting Health Awareness and Practices in Nigerian Communities

Despite the significant role of Adult Education programs in improving health awareness and practices, several challenges hinder their effectiveness, particularly in Northern Nigerian communities. These challenges are influenced by social, economic, cultural, and infrastructural factors.

i. Cultural and Religious Beliefs: Deep-rooted cultural practices and religious beliefs often conflict with modern health messages. For example, some communities believe in traditional healing methods and reject Western medical practices, reducing the impact of health education campaigns (Ogunleye & Afolabi, 2017). Certain cultural norms may discourage women

from seeking maternal healthcare services, limiting the success of awareness programs (Audu et al., 2013).

ii. Low Literacy Levels: Many adult learners in Northern Nigeria have limited literacy skills, making it difficult for them to understand health education materials. Complex medical terms and scientific language used in some programs hinder effective learning (Ibrahim et al., 2014). In some cases, the lack of trained facilitators capable of simplifying medical concepts to suit participants' literacy levels further worsens the situation.

iii. Poverty and Economic Constraints: Financial hardship prevents many individuals from adopting recommended health practices, even when they are aware of them. For example, women may understand the importance of antenatal care but lack the financial resources to access healthcare services (Odetola, 2015). Poverty also limits access to nutritious food, proper sanitation facilities, and safe drinking water, affecting the overall impact of health education programs.

iv. Gender Inequality: In some parts of Northern Nigeria, cultural restrictions limit women's participation in educational and health awareness programs. Men are often the decision-makers in families, which can prevent women from accessing healthcare services or adopting positive health practices (Ajala et al., 2010).

v. Limited Funding and Resources: Adult education programs in Nigeria often suffer from inadequate funding, which restricts their ability to provide quality learning materials, hire trained facilitators, and organize outreach programs (UNESCO, 2006). The lack of proper facilities, such as classrooms and instructional tools, further limits the success of these programs.

- vi. **Inadequate Training for Facilitators:** Many adult education instructors lack proper training in health education delivery. Facilitators may struggle to present medical concepts in a culturally sensitive and relatable manner, reducing the effectiveness of awareness campaigns (Ibrahim et al., 2014).
- vii. **Resistance to Behavioural Change:** Even when individuals understand the benefits of improved health practices, some may resist change due to long-standing traditions or misconceptions. For instance, some families may refuse to vaccinate their children due to misinformation about vaccines (WHO, 2010).
- viii. **Inconsistent Program Delivery:** Many adult education health programs in Northern Nigeria are not sustained over time, leading to poor long-term results. Frequent disruptions caused by funding issues, security concerns, or lack of trained personnel weaken the continuity of these programs (Odetola, 2015).
- ix. **Language Barriers:** Although some programs use local languages, others still rely heavily on English, limiting understanding for learners who primarily speak Hausa or other indigenous languages (Audu et al., 2013).
- x. **Insecurity and Conflict:** Insecurity caused by insurgency, banditry, and communal conflicts in parts of Northern Nigeria has restricted access to educational programs. In some regions, fear of violence has discouraged participation in health awareness campaigns (Ajala et al., 2010).

Conclusion

Adult education is a vital tool for improving health awareness and practices in Nigerian communities. By integrating health literacy into adult education

programs, community members will gain essential knowledge that promotes positive health behaviors. Efforts such as literacy classes, community workshops, and media campaigns have proven effective in addressing maternal mortality, hygiene challenges, and vaccine hesitancy. To sustain these efforts, policymakers and educational institutions must expand adult education programs that incorporate health education tailored toward the unique cultural and social contexts of Northern Nigeria. With continued investment in adult education, improved health outcomes and stronger community development can be achieved.

Recommendations.

Based on the identified challenges, the following recommendations can improve the effectiveness of adult education programs in promoting health awareness and practices:

- ii. **Culturally sensitive and Language – Integrated Health Education:** Health Education programmes should be culturally sensitive by incorporating local and religious values, using indigenous languages like Hausa, and engaging community leaders, religious figures, and traditional healers. To enhance understanding, especially among low-literacy learners, facilitators should use storytelling, familiar proverbs, visual aids, and simplified language drawn from everyday community life.
- iii. **Capacity Building and Community-Based Health Campaigns:** Adult education programmes should train facilitators in interactive methods like role play, group discussions, and practical demonstrations, while partnering with health professionals to organize regular community campaigns that offer free check-ups, immunizations, and hygiene

education. Establishing peer education groups can help individuals share health information with their families and friends, promoting wider community awareness.

iv. Economic Empowerment and Gender-Inclusive Approaches: Adult education programmes should integrate income-generating skills like soap making, tailoring, or poultry farming to boost household income and improve access to health care, while also promoting gender-inclusive participation by creating safe spaces for women and involving men in maternal health awareness to encourage shared family responsibility.

v. Enhanced Funding and Leveraging Technology for Learning: To strengthen adult health education, government, NGOs, and international agencies should increase funding for essential resources like instructional materials, learning centers, and facilitator support, while also leveraging technology, such as mobile health platforms, radio broadcasts, social media, and digital learning tools, to deliver interactive health information and reach remote communities effectively.

iv. Sustained Program Delivery: Stakeholders should prioritize the continuity of adult education programs through consistent funding, regular training of facilitators, and effective monitoring strategies. Establishing community support groups to sustain knowledge transfer after program completion can ensure long-term impact.

v. Addressing Security Concerns: Insecurity in parts of Northern Nigeria requires adaptive strategies such as mobile health education units and online learning platforms to reach vulnerable populations. Collaborating with local security agencies can ensure safe program delivery in conflict-prone areas

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Impacts of L1 Oral Digital Storytelling on L1 Writing Skills of JSS III Students in Kano State

By

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Abstract

The study explores the impacts of L1 oral digital storytelling in teaching L1 writing skills to JSS III students in Kano State. Predominant use of traditional approach in language teaching, constitute the problem of the study. Within-group design method was employed for the study. The study employed purposive sampling technique for this study. Purposive sampling technique was chosen here because it allows the researchers to select participants that have been identified as useful indicators for the study. Useful indicators here include security of life, and less populated JSS classroom in a rural community of between 50 to 60 students per class. This was based on the assumption that; rural communities still maintain the cultural traditional of oral storytelling. The study used *Labarina*, as a tool for data collection. This instrument has two rubrics one for LI oral storytelling presentation skills, and the other for LI writing skills. Two research questions and two hypotheses were tested. The outcome of the study reveals no significant differences in the impact of digital storytelling on L1 oral storytelling, and L1 writing skills between genders. This implies that the strategy is inclusively a gender friendly approach in enhancing the L1 oral storytelling and writing skills of JSS III students in the North-western states of Nigeria. This informs that the strategy is gender friendly. Consequently, the study recommends Mother tongue as language of instruction, and the integration of digital storytelling a form of digital literacy in the secondary school curriculum, particularly in the study area.

Keywords: *digital storytelling, L1 oral storytelling, writing skills, JSS students*

Introduction

Digital storytelling is a multimodal approach combining oral narration, images, and sometimes text, as pedagogical learning strategies. It is a form of digital literacy, a kind of cognitive-thinking strategies that engage students in both traditional and innovative ways of telling a story. The concept revolves around two skills: The traditional art of oral storytelling combines with the skill of manipulating a variety of digital multimedia such as digital text, images, audio, and visual elements to tell a

story. The pedagogical value of digital storytelling is its power in helping learners become engaged in the learning situation (Cassell, 2009; Berk 2009; Collins and Madigan, 2010; Hung, et al, 2012; Yoon, 2013). The major components of this Strategies include oral storytelling, visual images, written texts, and recorded audio narration. Also, Erkeye, (2003), Valkano and Watts (2007) and Suleiman (2011) all reported on the impact of digital storytelling on L1 writing and reading skills in different experimental investigation. Valkano and Watts (2007), opined that since the goal of second language teaching was

to help students communicate fluently in the target language, instructors should integrate L1 short stories to reinforce literary appreciation, culture learning, reading skills and high order critical thinking skills.

Oral storytelling is an ancient tool for learning. It is one of the most primeval human activities widely accepted as means of passing down norms, culture, traditions and beliefs from one generation to another. It is a repertoire of ancient experiences and expertise. Erkeye (2005) reported on the effectiveness of using L1 oral storytelling in teaching language related skills. His view was that storytelling in learners' mother tongue adds a new dimension to the teaching of English as a foreign language. The study affirms that storytelling helps students to write more creatively, improved students vocabulary and reading skills.

Hausa language on the other hand, serves both as lingua franca and first language (L1) for millions, particularly in the Northern region of the country. According to (Malone, 2016) L1 is the foundation for learning the target language. Ferguson, (2013) also states that there is a substantial body of academic opinion asserting the view that early literacy is most effectively conducted in a language familiar to the learner. Similarly, Alimi, et al, (2020), report that the use of L1 as instructional language across subjects, along with the target language will positively overturn the dismissive attitude towards Nigerian indigenous languages.

Traditional teaching methods, which often emphasise rote memorisation and

grammar drills, coupled with the early exit of mother tongue model in which the mother tongue is used as medium of instruction for three to four years thereafter giving way to target language constitute the problem of the study.

Objectives of the Study

The aim of this study is to explore the impacts of oral digital storytelling in teaching L1 writing skills to JSS III students of North- Western Nigeria in Kano state. However, the specific objectives of the study are to: determine the Impact of Digital Storytelling strategies on L1 oral storytelling skills of JSS III students exposed to the treatment between gender in the study area, and determine the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area.

Research Questions

The following research questions were asked to achieve the objectives of the study.

What is the Impact of Digital Storytelling strategies on L1 oral storytelling skills of JSS III students exposed to the treatment between gender in the study area?

What is the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area?

Null Hypotheses

The following Null Hypotheses were generated from the research questions as guide to the study. The Hypothesis was tested employing appropriate statistical test at $p \leq 0.05$ significant level.

There is no significant difference in the Impact of Digital Storytelling strategies on L1 oral storytelling

skills of JSS III students exposed to the treatment between gender in the study area.

There is no significant difference in the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area.

Research Design

The study employs Within-group design The design is chosen here because it allows the use of existing classroom structure where disrupting the existing class structure for sampling purposes is not necessary (McQueen & Knussen, 2006; Sambo, 2008). The target population of the study constitute all JSS III registered in the public primary schools in North-western states. The study employed purposive sampling technique to sample both the state and the schools for the study. Purposive sampling technique was chosen here because it allows the researchers to target the participants that have been identified as useful indicators for the study (McQueen &Knussen, 2006).

Some useful indicators here include security of life, less populated classroom of a rural community. Rural school was selected based on the assumption that; the rural community still maintain the cultural tradition of oral storytelling. In this view, Kiru Government Junior Secondary School was selected from Kiru Local Government of Kano state to serves as experimental school. The study has a sample size of 38 students that comprise of 19 students each for both genders. Convenience sampling technique was employed for sample size. This was based on the recommendation that minimum

of 30 participants per group is ideal for experimental research (Fraenkel & Wallen, 2000).

Research Instrument for Data Collection

Labarina, with its two rubrics for oral storytelling and written presentation skills were employed for data collection. This instrument served as weekly inventory of the students' stories told in the classroom. The instrument has two rubrics to assess both the oral storytelling and writing skills of the students. The oral storytelling aspect was graded based on five criteria: voice clarity and pronunciation, expression and fluency, audience engagement and interaction, content delivery, and use of language and traditional vocabulary. Each of these was graded based on four scales from excellent which is scored as 10 points, best scored as 8 points, good as 6 points, and limited scored as 4 points. The story writing aspect also has five criteria that include content and Creativity, organization and structure, language use vocabulary, character development and dialogue, and mechanical accuracy. Each of the criteria was graded the same with the oral storytelling.

Reliability Scale of the Instruments

The two sections of the instrument were pilot tested to ascertain the suitability of the instruments for data collection in two rural junior secondary schools of Gwandu local government of Kebbi state. Based on the data collected, the instruments were subjected to Cronbach's Alpha reliability test. The reliability statistics of the two parts of the instrument used to grade both the oral and written aspects of *Labarina* is .730 and .923 respectively. According to (Achour, 2017) alpha reliability level between 0.7 and 0.8 is acceptable and indicate that the items in the instruments are fairly consistent.

Data Presentation

This section presents the weekly classroom activities on L1 oral storytelling, and the transcription of the stories told by the students in the classroom. Similarly, after every storytelling session, the students were guided by their instructor to write their stories and submit for reassessment. Written Presentation Rubric was used as a guide based on five skills that include content and creativity, organisation and structure, language use and vocabulary, character development and dialogue, and language use and grammar.

Research Question One

Research question one asked: what is the Impact of Digital Storytelling strategies on L1 oral storytelling skills of JSS III students exposed to the treatment between gender in the study area? To answer this question, the means score of both genders is compared and presented in Table 1.

Table 1: Students Means Scores of the Oral Presentation between Genders

Gender	N	Mean	SD	SEM	MD	SED	95% Confidence Interval of the Difference	
							Lower	Upper
Male	19	55.16	26.148	5.999				
Female	19	68.11	32.114	7.368	-12.947	9.501	-32.216	6.32
Total	38							

Table 1 shows a significant mean difference between females with the mean of 68.11, as against 55.16 of the male students. This answers the research question that there was significant difference between the mean scores of the male and female, with female scoring high means of 68.11

Research Question Two

What is the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area? To answer this question, the means score of both genders is compared and presented in Table 2.

Table 2. Students mean score of the Written Presentation Between Genders

Gender	N	Mean	SD	SEM	MD	95% Confidence Interval of the Difference		
						SED	Lower	Upper
Male	19	46.84	25.598	5.873				
Female	19	57.16	31.357	7.194	-10.316	9.286	-29.149	8.518
Total	38							

Table 2 shows that the male mean score is 46.84 lower than 57.16 of their female counterparts. This answers the research question that there was significant difference between the mean scores of the male and female, with female having the high mean score.

Null Hypotheses Testing

Independent samples t-test was employed to test hypotheses one and two. The null hypotheses were

tested at $\alpha \leq 0.05$ level of significance. Null Hypothesis One

There is no significant difference in the Impact of Digital Storytelling strategies on L1 oral storytelling skills of JSS III students exposed to the treatment between gender in the study area. The hypothesis was tested using Independent Samples t-test, and the summary of the computation is presented in Table 3.

Table 3. Summary of the independent samples t-test on L1 oral storytelling Between Genders

Gender	N	Mean	SD	SEM	t	DF	P
Male	19	55.16	26.148	5.999			
Female	19	68.11	32.114	7.368	-1.363	36	.181
Total	38						

Table 3 presents the summary of independent samples t-test on L1 oral storytelling skills of JSS III students exposed to the treatment between gender. The result shows that $t(36) = -1.363$, $p=0.181$; the null hypothesis that stated no significant difference was retained. Because the P value is greater than 0.05 level of significance. Therefore, there was no significant difference in the Impact of Digital Storytelling strategies on L1

oral storytelling skills of JSS III students exposed to the treatment between gender in the study area.

Null Hypothesis Two

There is no significant difference in the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area. The hypothesis was tested using Independent Samples t-test, and the summary of the computation is presented in

Table 4: Summary of Samples t-test on L1 Writing Skills between Genders

Gender	N	Mean	SD	SEM	t	Df	P
Male	19	46.84	25.598	5.873			
Female	19	57.16	31.357	7.194	-1.111	36	.274
Total	38						

Table 4. presents the summary of independent

samples t-test on L1 writing skills of JSS III

students exposed to the treatment between gender. The result shows that $t(36) = -1.111, p=0.274$. The null hypothesis that stated no significant difference was retained, because the p value is greater than 0.05 level of significance. Therefore, there was no significant difference in the Impact of Digital Storytelling strategies.

Summary of the Findings The findings of the study are as follows:

No significant difference was found on Digital Storytelling strategies on L1 oral storytelling skills of JSS III students exposed to the treatment between gender in the study area.

No significant difference was found on the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area.

Discussions of the findings

This section discusses the findings of the study. The first and second findings reveal no significant difference was found in the Impact of Digital Storytelling strategies on L1 oral storytelling and L1 writing skills of JSS III students exposed to the digital storytelling strategies between gender in the study area. The findings inform that the strategy is inclusively a gender friendly approach in enhancing the L1 oral storytelling and writing skills of JSS III students in the North-western states of Nigeria.

Table 1 reveals that the female participants score 68.11, against 55.16 mean scored by their male counterparts. The table reveals a mean difference of 12.95. Independent samples t-test was used to test to see if the mean difference of the oral presentation skills between genders is significant or otherwise.

The summary of the Independent Samples t- test in Table 3 reports that, the mean difference of the oral presentation skills between genders was not significant, hence, the null hypothesis was retained. This finding confirmed Erkaye's (2005) report on the effectiveness of using L1 oral storytelling in teaching language related skills. His view was that storytelling in learners' mother tongue adds a new dimension to the teaching of English as a foreign language. The study affirms that storytelling in learners' mother's tongue helps them to write more creatively, improved students vocabulary and reading skills.

Similarly, the second finding reports no significant difference was found in the impact of Digital storytelling strategy on the L1 writing skills of JSS III students exposed to the treatment between gender in the study area. Table 2, the summary of the means scores of the written presentation skills between genders reveals that females scored 67.16, against 46.84 mean scored by their male counterparts. The table reveals a mean difference of 10.32. However, independent samples t-test was used to test whether the mean difference of the written presentation skills between genders is significant or not.

The summary of the Independent Samples t- test employed to test the hypothesis in Table 4 reports that, the mean difference of the written presentation skills between genders was not significant, hence, the null hypothesis was retained. This also reveals that digital storytelling strategies favours both genders in L1 writing skills of the participants. This finding is in conformity with Erkaye, (2003), Valkano and Watts (2007) and Suleiman (2011) who reported on the

impact of digital storytelling on L1 writing and reading skills in different experimental investigation.

Conclusion

From the findings of the study, it was conclusively informed that digital storytelling strategies is gender friendly and is effective strategy for teaching L1 oral storytelling and L1 writing presentation skills to JSS III students in North-western Nigeria. The findings also informed that L1 oral digital storytelling is amiable strategy to source for culturally authentic material as L1 instructional materials in our public schools. As reported by Valkano and Watts (2007), that since the goal of second language teaching was to help students communicate fluently in the target language, instructors should integrate learners' mother's tongue to reinforce literary appreciation, culture learning, reading skills and high order critical thinking skills.

Recommendations

Owing to the findings of the study, the following recommendations were made:

The positive impact of digital storytelling suggests that the strategy enhances both students' oral and writing skills. Therefore, this approach is hereby recommended to be integrated across educational levels and across subjects to improve overall learning outcomes. This could be achieved through annual L1 oral storytelling and writing competitions across secondary nationwide.

The effectiveness of the strategy for both genders and rural communities highlights its inclusivity as

instructional approach. Consequently, it is recommended to be integrated in the secondary school curriculum as a means reviving and sourcing L1 culturally appropriate authentic reading materials for pedagogical purposes without relying on foreign organisations.

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Social Media Marketing and Performance of Small Business Enterprises in Kano State

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Abstract

This study investigated social media marketing and performance of small business enterprises in Kano state, Nigeria. Four research questions guided the study, which adopted a descriptive survey design. The population consisted of small business enterprises in 44 local government area headquarters of the state, numbering two hundred and seventy (270). A sample of 150 respondents consisting of owners, managers and staff of small business enterprises in 30 local government headquarters representing 68% of the population was randomly selected. The instrument for collecting relevant data was self-structured questionnaire which was viewed and ensured that it covered the relevant content and concepts and then validated by two experts from Bayero University Kano and the reliability established through Cronbach Alpha which yielded an index of 0.80. Mean and standard deviation were used to analyze and answer the research questions on a four-point rating scale response options. The result revealed that small business enterprises in Kano state, Nigeria adopted and used social media marketing, mostly TikTok and Facebook which significantly increased market share, increased sales and revenue, reduce advertising cost, facilitated communication with customers and also affirmed the contests associated with social media marketing usage as lack of finance, resistance to change, organizational culture, inability to secure customer's data, difficulty in measuring return on investment and lack direction. It recommended among others, that small business enterprises should prioritize cost-effective social media strategies by focusing on organic creating engaging content and leveraging user-generated content

Keywords: *social media marketing, small business, enterprises performance in Kano*

Introduction

In today's digital age, social media has become an indispensable tool for businesses to reach and engage with their target audience. Small business enterprises (SBEs) in Kano state, Nigeria, are no exception. With the increasing popularity of social media platforms, SBEs in Kano state are leveraging these platforms to promote their products and services, enhance their brand visibility, and drive sales. Social media marketing has emerged as a vital strategy for SBEs to compete in the market, build customer relationships and achieve business growth. Some social media platforms small business enterprises use includes and not limited to Facebook, Instagram, LinkedIn, Twitter, TikTok, Pinterest, YouTube and so on. According to Aliyu, (2023), Facebook is used by over 2 billion active users and is ideal for building a community, sharing

updates, and running targeted advertisements. It is particularly useful for business to customers (B2C) businesses and those targeting a broader audience. To Sa'ad, (2022) Instagram is visually driven platform that is perfect for businesses with strong visual content, such as fashion, art, or design which is also effective for reaching younger audiences and creating engaging stories. Papacharissi, (2009) defined LinkedIn as a professional networking site that enable professionals to connect with others in their industry, share information, and build relationships which is suitable for business to business (B2B) businesses, thought leadership and industry- specific content. It is also ideal for targeting decision-makers and professionals. Java et al., (2007) opined that Twitter is a type of microblogging platform for blogging that allows

users to share short messages, images or videos with their followers. The platform excels at real-time updates, customer service, and engaging in trending conversations which is beneficial for businesses that want to stay topical and responsive. To Titilayo (2025), TikTok is known for its viral content and is perfect for businesses targeting greater number of Gen Z and younger audiences and it is ideal for creative, short-form videos that showcase products or services in a fun engaging way. Pinterest is another social media platform that is geared towards businesses with visually appealing products or services, particularly in niches like fashion, home decor, or Do it yourself (DIY) projects. It is effective for driving website traffic and sales (Aliyu, 2023; Sa'ad, 2022; & Titilayo, 2025). Burgess and Green (2009), defines YouTube as a video-centric platform, that is suitable for businesses that can create high- quality, engaging video content that is ideal for thought leadership, product demonstrators and evergreen content.

Small business enterprise (SBE) performance is a multifaceted concept that encompasses various dimensions, including financial performance, market performance and operational efficiency. According to Beck and Demircuc-Kunt (2006), financial performance includes revenue growth, profitability and return on investment. To Java et al., (2007), market performance involves market share, customer satisfaction and brand reputation. On the other hand, Aliyu, (2023), emphasized that operational efficiency deals with productivity, quality and efficiency of business processes. Studies have shown that these elements are influencing SBE performance and that business owners and policymakers can develop strategies to support the growth and success of small businesses. A study by Titilayo (2025) on the impact of social media marketing on SMEs: a case study of Nigeria,

discovered that social media marketing has a significant impact on SME growth in Nigeria, with 65.1% of respondents strongly agreeing that it has assisted financial growth in SMEs.

Studies have shown that social media marketing has impacted business enterprise in other ways, for instance a study by Trainor et al., (2014), on social media technology usage and customer relationship performance: A capabilities-based perspective, found that there is increased brand awareness that enable them build a strong brand and unique identity, reputation with social media platforms in terms of provision of a vast audience (market share) and promote their brand, products and services. They also discovered that SMEs that regularly post content on social media platforms have cost effectiveness with their marketing. Kaplan and Haenlein, (2010), on a study of users of the world unite: The challenges and opportunities of social media, found that social media enables SMEs to advertise to reach new customers and engage with them, respond to feedback and monitor social media conversations about their brand, facilitates communication with customers which improves relationships and loyalty with them. They also discovered that with social media, advertising is often less expensive than traditional advertising methods and that they can reach new customers and increase their market share. Sa'ad (2022), investigated the implications of social media adoption on marketing strategy of SMEs in Kano state, Nigeria, found that social media marketing can lead to increased sales and revenue for SMEs.

Beck and Demircuc-Kunt, (2006), who investigated small and medium-size enterprises: Access to finance as a growth constraint, found that SBEs often face challenges in accessing finance,

which can limit their growth and performance. Cuervo-Carabel et al., (2023), investigated corporate social responsibility and its communication on Twitter: Analysis of the discourse and feelings generated in society, instituted that limited resources like insufficient capitals, including budget, personnel and infrastructure, can hinder social media marketing efforts and limit a company's ability to fully exploit social media analytics. Similarly, in a study by Brennan and Croft (2012), on the use of social media in B2B marketing and branding: An exploratory study, originated that, larger organizations are more likely to adopt social media marketing due to their resources and infrastructure, suggesting that small firms with less capital will be challenged in the use of social media marketing. Lepore et al., (2022), on the exploration of corporate governance in the digital age: The role of social media and board independence in CSR disclosure. Evidence from Italian listed companies, initiated that organizational culture and resistance to change can make it difficult to adopt new social media strategies and companies must be willing to adapt to changing trends and technologies. Schiuma et al., (2024), established that without clear goals and objectives, social media marketing efforts may lack direction and focus, making it challenging to measure success. Voorveld et al., (2018), in the study of engagement with social media and social media advertising: The differentiating role of platform type, instituted that difficulty in measuring the return on investment (ROI) of social media marketing efforts can make it exciting to justify resources. Guesalaga (2016), on the use of social media in sales: Individual and organizational antecedents and the role of customer engagement in social media, found that frequent changes in social media systems can affect

visibility and reach. Kshetri, (2016), on the study of the evolution of the internet economy: A global perspective, detailed that inability to secure customer data and protection against cyber threats can hinder social media marketing adoption, the implication is that ensuring the security of customer data and protecting against cyber threats is essential for social media marketing adoption.

Statement of Problem

Despite the growing importance of social media marketing, many SBEs in Kano state face challenges in effectively utilizing these platforms to improve their performance. Limited resources, inadequate skills and lack of awareness about social media marketing strategies, organizational culture and resistance to change hinder SBEs' ability to leverage social media to its full potential. Other problems are lack of direction and focus, frequent changes in social media systems, inability to secure customer data and protection against cyber threats and difficulty in measuring the return on investment, make SBEs in Kano state struggle to reach audience, engage with customers and ultimately drive sales and revenue growth.

Research Questions

What is the current level of social media utilization among small business enterprises in Kano state, Nigeria?

What are the most effective social media platforms used by small business enterprises in Kano state, Nigeria?

How does social media marketing influence the performance of small business enterprises in Kano state, Nigeria?

What are the challenges associated with social media marketing on the performance of small business enterprises in Kano state, Nigeria?

Research Methods

The study adopted a cross-sectional survey design due to the nature of the study, which is primarily concerned with identifying and categorizing social media marketing platforms and their impacts on small business enterprises' performance. The population comprised all small business enterprises registered with Kano state Ministry of Trade, Commerce and industries that had operated for three years and above in trade, services and manufacturing around the 44 local government headquarters numbering two hundred and seventy (270). Using Krejcie and Morgan (1970) list of published table a sample of 150 respondents consisting of owners, managers and staff of small business enterprises in 30 local government headquarters representing 68% of the population was randomly selected. The instrument used for collecting relevant data for this study was self-structured questionnaire titled "Social media marketing and performance of small business enterprises in Kano state, Nigeria", which was viewed to ensure that it covers the relevant content and concepts and then validated by two experts in marketing education studies from Bayero University Kano and the reliability established through Cronbach Alpha which yielded an index of 0.80. Mean and standard deviation were used to analyze and answer the four research questions on a four-point rating scale response options thus: Strongly Agree (SA=4); Agree (A=3); Disagree (D=2); Strongly Disagree (SD=1) and the total weighted frequencies (TWF) were used to determine the mean for each item.

The decision rule for the mean level was 2.50 therefore, items which had scores of 2.50 and above showed reception while mean scores below 2.50 showed non-reception and was rejected.

Results

Question one: What is the current level of social media utilization among small business enterprises in Kano state, Nigeria?

Table 1: Mean and standard deviation analysis of current level of social media utilization among small business enterprises in Kano state, Nigeria

S/N	Items	TWF					Mean	SD	Decision
		SA	A	D	SD	N			
1	Our company uses social media to promote our products or services	30	76	41	03	150	2.88	.74	Agreed
2	We regularly post content on social media platforms	11	74	58	07	150	2.59	.70	Agreed
3	Social media helps us engage with our customers	19	82	41	08	150	2.75	.74	Agreed
4	We use social media analytics to track our performance	06	62	60	22	150	2.35	.78	Disagreed
5	Our company has a dedicated social media team/person	19	92	47	01	150	2.74	.58	Agreed
6	We use social media advertising to reach new customers	34	78	37	01	150	2.97	.71	Agreed
7	Social media has improved our brand awareness	15	78	45	12	150	2.64	.77	Agreed
8	We regularly monitor social media conversations about our brand	33	64	53	00	150	2.87	.75	Agreed
Aggregate mean average							2.72		

Source: Researchers' field result, 2025 Table 1 presents the mean and standard deviation analysis of current level of social media utilization among small business enterprises in Kano state, Nigeria. Given an aggregate mean average of 2.72 which falls above the criterion mean of 2.50, it can be concluded that small business enterprises in Kano state, Nigeria embrace the use of social media in marketing of their goods and services. Table 1 shows that small business enterprises in Kano state highly use social media in advertising to reach new customers more (mean 2.97), while less is

on use of social media analytics to track performance (mean 2.35). The none acceptance of analytics to track performance probably is because the small business enterprises owners, managers and staff in Kano state are not familiar on how to perform this function, implying that they should stay update, encourage learning and the use of data in decision making.

Question Two: What are the most effective social media platforms used by small business enterprises in Kano state, Nigeria?

Table 2: Mean and standard deviation analysis of the most effective social media platforms used by small business enterprises in Kano state, Nigeria

Items	TWF					Mean	SD	Decision
	SA	A	D	SD	N			
Facebook	59	76	10	05	150	3.26	.73	Agreed
Instagram	01	51	75	23	150	2.20	.70	Disagreed
Twitter	02	83	57	08	150	2.53	.62	Agreed
LinkedIn	22	74	45	09	150	2.73	.79	Agreed
TikTok	55	87	08	00	150	3.31	.57	Agreed
Pinterest	01	37	66	46	150	1.95	.76	Disagreed
YouTube	03	53	76	18	150	2.27	.69	Disagreed
Aggregate mean average						2.61		

Source: Researchers' field result, 2025

Table 2 presents the mean and standard deviation analysis of the most effective social media platforms used by small business enterprises in Kano state, Nigeria. Given an aggregate mean average of 2.61 which falls above the criterion mean of 2.50, it can be concluded that the most effective social media platforms used by small business enterprises in Kano state are TikTok with the highest mean score of 3.31, followed by Facebook with mean score of 3.26. This result suggests that small business enterprises in Kano state particularly target greater Gen Z or younger customers and also broader audience. The lesser social media

platforms used by small business enterprises in Kano state are Pinterest with mean score of 1.95, followed by Instagram with mean score of 2.20, then YouTube mean score of 2.27. This result suggests that small business enterprises in Kano state are not familiar with Pinterest, Instagram and YouTube, as these platforms are used by professionals who connect with their industry, share information and build relationships among themselves.

Question three: How does social media marketing influence the performance of small business enterprises in Kano State, Nigeria?

Table 3: Mean and standard deviation analysis of social media marketing influence on the performance of small business enterprises in Kano State, Nigeria

Items	TWF					Mean	SD	Decision
	SA	A	D	SD	N			
Advertising is often less expensive than traditional methods	62	78	9	01	150	3.34	.62	Agreed
Facilitates communication with customers	47	89	12	02	150	3.21	.64	Agreed
Improves relationships with our customer increase loyalty	62	74	14	01	150	3.31	.67	Agreed
Increase market share	67	76	05	02	150	3.39	.62	Agreed
Increase brand reputation and awareness	38	77	32	03	150	3.00	.74	Agreed
Establishes a unique brand identity	16	74	52	08	150	2.65	.74	Agreed
Leads to increased sales and revenue	60	82	07	01	150	3.34	.60	Agreed

Aggregate mean average

3.12

Source: Researchers' field result, 2025

Table 3 presents the mean and standard deviation analysis of the social media marketing influence on the performance of small business enterprises in Kano state, Nigeria. Given an aggregate mean average of 3.12 which falls above the criterion mean of 2.50, it can be concluded that social media marketing influenced the performance of small business enterprises in Kano state. Table 3 show that the highest effect is on increase market share with mean score of 3.39, followed by increased sales and revenue and advertising being less expensive than traditional methods with

mean score of 3.34 respectively. The result also revealed that with social media marketing, communication with customer is facilitated which improves relationships and increase customers' loyalty. The less effect of social media marketing on small business enterprises performance in Kano state is establishing unique brand identity with mean score of 2.65.

Question four: What are the challenges associated with social media marketing on the performance of small business enterprises in Kano state, Nigeria?

Table 4: Mean and standard deviation analysis of the challenges associated with social media marketing on the performance of small business enterprises in Kano state, Nigeria

<i>Items</i>	<i>TWF</i>					<i>Mean</i>	<i>SD</i>	<i>Decision</i>
	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>			
Lack of access to finance	66	77	06	01	150	3.39	.60	Agreed
Lack of expertise/ personnel	52	81	13	04	150	3.21	.71	Agreed
Algorithm/ system changes	34	74	42	00	150	2.95	.71	Agreed
Organizational culture	53	81	14	02	150	3.23	.67	Agreed
Resistance to change	65	79	11	04	150	3.31	.72	Agreed
Lack direction/ no clear goal	46	73	29	02	150	3.09	.74	Agreed
Difficulty in measuring the return on investment (ROI)	47	77	24	02	150	3.13	.72	Agreed
Inability to secure customer's data	39	102	08	01	150	3.19	.55	Agreed
<i>Aggregate mean average</i>						3.19		

Source: Researchers' field result, 2025

Table 4 presents the mean and standard deviation analysis of the challenges associated with social media marketing on the performance of small business enterprises in Kano state, Nigeria. Given an aggregate mean average of 3.19 which falls above the criterion mean of 2.50, it can be established that there are challenges attendant to small business enterprises' social media marketing performance. Table 4 show that the highest challenge is lack of access to finance (mean 3.39), followed by resistance to change (mean 3.31), then organizational culture (mean 3.23) and lack of expertise/ personnel (mean 3.21). Other challenges are inability to secure customer's data (mean 3.19), difficulty in measuring the return on investment (mean 3.13) and lack direction/ no clear goal with mean score of

3.09. The less trial is process/ system changes with mean score of 2.95.

Discussion of Findings

The result on research question one revealed that small business enterprises in Kano state, Nigeria adopt the use of social media in marketing of their goods and services in the areas of advertising to reach new customers, promote products or services, regularly monitoring social media conversations about the product brand and engaging with customers. This finding is similar to Kaplan and Haenlein, (2010) which revealed that social media enables SMEs to advertise and engage with new customers, respond to feedback and monitor social media conversations about their brand and facilitates communication with customers thereby improving relationships.

Similarly, Trainor et al., (2014), pointed out that social media marketing increases brand awareness that enable them build a strong brand and unique identity and reputation in terms of provision of a vast audience to promote brand, products and services which is also in line with the present study that revealed small business enterprises in Kano state adopt and use social media to improve their product brand awareness which yield mean of 2.64. The study also revealed low analytics to track performance in the use of social media (mean of 2.35), this is probably because the small business enterprises owners, managers and staff in Kano state are not familiar on how to perform this task, suggesting the need to stay update, continue to learning and use data in decision making, as this will also impact their performance positively.

The findings on research question two revealed that effective social media platforms used by small business enterprises in Kano state are TikTok with the highest mean 3.31, followed by Facebook with mean 3.26. This finding is similar to Titilayo (2025), who pointed out that TikTok is perfect for businesses targeting greater number of Gen Z and younger audiences and it is ideal for creative, short-form videos that showcase products or services in a fun engaging way. Similarly, Aliyu (2023), which revealed that Facebook is used by over 2 billion active users and is ideal for building a community, sharing updates and running targeted advertisements, particularly useful for B2C businesses and those targeting a broader audience.

The significance on research question three revealed that social media marketing influenced the performance of small business enterprises in Kano state in the areas of increase market share with mean score of 3.39 and increased sales and revenue of mean score of 3.34. This finding is similar to Sa'ad (2022), and Titilayo (2025), which revealed that social media marketing has a significant impact on SME growth in Nigeria, with 65.1% of respondents strongly agreeing that it has assisted them in financial growth through increase in sales. Similarly, Trainor et al., (2014), pointed out increase market share and increased brand awareness which is in agreement with the present study. The present study also revealed that communication is facilitated with customers and improved relationships which increase loyalty with the use of social media marketing, this finding is in line with Kaplan and Haenlein, (2010), which pointed out that social media conversations about brand, facilitates communication with customers thereby improving relationships and loyalty.

Furthermore, the result from research question four revealed that there are challenges associated to small business enterprises' performance with social media marketing in the area of lack of access to finance, which is in consonant with the findings of Beck and Demirguc- Kunt, (2006); Brennan and Croft (2012); Cuervo-Carabel et al., (2023). The study also revealed resistance to change and organizational culture as challenges to the use of social media marketing by small business enterprises, these confirmed Lepore et al., (2022) study, which pointed out that organizational culture and resistance to change can make it difficult to adopt new social media strategies and companies must be willing to adapt to changing trends and technologies.

Other challenges include inability to secure customer's data which is in agreement with Kshetri, (2016); difficulty in measuring return on investment which affirmed Voorveld et al., (2018); and lack direction or no clear goal which also aligned with Schiuma et al., (2024). These consistent verdicts inferred that small business enterprises' social media marketing is faced with encounters.

Conclusion

Social media marketing is adopted and used by small business enterprises in Kano state, Nigeria, with TikTok and Facebook being the most effective platforms of the social media which significantly influenced their performance, in the areas of increase market share, increase sales and revenue and less advertisement cost. The social media also facilitated communication with customers that helped in establishing unique brand and identity of product and services with customers, thereby improving relationships and increase loyalty. On the other hand, the study affirmed the contests associated with social media marketing usage by small business enterprises to include lack of finance, resistance to change, organizational culture, inability to secure customer's data, difficulty in measuring return on investment and lack direction or no clear goal of small business enterprises owners, managers and staff. The study concludes that longitudinal study using mixed- method like quantitative and qualitative over a period of 2-3 years should be done to track changes over time. While this is going on, policymakers and support agencies in Kano state should facilitate training and financing through grants, tax incentives, and social media marketing skills training among small business enterprises' owners, managers and staff.

Recommendations

For small business enterprises owners, managers and staff to handle the challenges in running their and maintaining calmness and physical wellbeing while using social media marketing:

They should prioritize cost-effective social media strategies through low-cost paid advertising, focusing on organic creating engaging content and leveraging user-generated content and utilize free social media analytics tools such as Facebook insights and Twitter analytics, to track performance and measure ROI.

They should train employees on social media best practices and its potential impact on business outcomes, educate on data security best practices and the importance of protecting customer data and regularly monitor and report on social media performance to demonstrate progress.

To measure return on investment, they should set clear social media goals and objectives for social media marketing, such as increasing website traffic or generating leads, using social media analytics tools such as hoot suite insights or sprout social, to track performance and measure ROI, monitor and adjust social media strategy by regularly monitoring social media performance and adjust the strategy as needed to optimize ROI.

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Effects of Computer Simulation and Animation Instructional Packages in Flipped Classroom Settings on Secondary School Geography Students' Achievement in Jigawa State

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Abstract

The study compared the effectiveness of computer simulation and animation instructional packages in flipped classroom settings on secondary school students' achievement in Geography in Jigawa State. A quasi experimental control group design was adopted with a population of 1125 SSII Geography students in Birnin Kudu and sample of 129 students was purposively drawn from two intact classes. A 40-items Geography Achievement Test (GSAT) was used for data collection, while computer simulation and computer animation instructional packages were administered to students as treatment in flipped classroom settings. The instrument was subjected to face and content validation and a reliability coefficient of 0.83 was obtained using test re-test method and PPMC. Descriptive statistics of mean and standard deviation were used to answer the research questions, while inferential statistics of z-test, ANOVA and ANCOVA were used to test the null hypotheses at 0.05 level of significance. The findings revealed significant difference between the mean achievement scores of Male and Female Geography students exposed to computer simulation and computer animation instructional packages in flipped classroom settings and lecture method. The study concluded that, the use of computer simulation and computer animation instructional packages in flipped classroom settings enable students to become active participants during teaching and learning of Geography which in turn improved the academic achievement of Geography concepts. The study recommended that, the Geography teachers should incorporate technology-based flipped classroom instructional strategies into teaching and learning as it was found to be gender friendly, in order to improve Geography students's academic and retention

Keywords: *Achievement, Animation, Simulation, Flipped Classroom, Geography and Retention.*

Introduction

Technological advancements have significantly transformed the educational landscape by introducing innovative tools and learner-centered approaches to teaching and learning (Campillo-Ferrer & Miralles- Martínez, 2021; Ozyurt, 2022). In geography education, technology plays a crucial role in fostering interactive learning environments that go beyond traditional lecture methods (Falode & Mohammed, 2023). By integrating Information and Communication Technologies (ICTs), teachers can create engaging learning experiences that enhance students' participation

and comprehension. These innovations are vital in addressing the growing demand for diverse and accessible educational resources.

Geography, taught in Nigerian secondary schools and tertiary institutions, focuses on the study of natural and human phenomena on the earth's surface and in the atmosphere (Mogbo, Ibrahim & Tukura, 2021). It emphasizes spatial relationships, environmental changes, and the interconnectedness of natural and cultural systems (Olaniyi & Oladokun, 2021). Despite its relevance to national development and integration, students' performance in geography has been unsatisfactory due to factors such as a shortage of

qualified teachers and reliance on outdated, teacher-centered lecture methods (Eze, 2021). This has prompted the need for more engaging, learner-centered teaching strategies.

One promising approach is the **flipped classroom model**, which restructures traditional teaching by shifting direct instruction outside the classroom and using classroom time for active, collaborative learning (Ruslan et al., 2022; Ozyurt, 2022). This method allows students to learn at their own pace and revisit materials as needed, thereby catering to individual learning differences (Oladimeji et al., 2021). Research shows that flipped classrooms improve students' achievement and retention in various subjects, although its effectiveness in geography when combined with computer simulations and animations remains underexplored (Adonu et al., 2021; Afzali & Izadpanah, 2021).

Computer simulation replicates real-world processes to help students grasp complex concepts, fostering deeper cognitive understanding (Inyang, 2021; Falode & Mohammed, 2023). Studies have demonstrated its positive impact on academic achievement and retention across disciplines such as genetics, mathematics, and arithmetic progression (Asogwa et al., 2022; Gimba, Falode & Bashir, 2021; Jega et al., 2020). Similarly, **computer animation** uses motion graphics and multimedia to enhance concept visualization and cognitive processing (Falode et al., 2020). Research consistently shows that animation improves students' performance and retention in subjects

like geography and science (Mogbo et al., 2021; Faruk et al., 2022).

Academic achievement reflects measurable learning outcomes, while retention refers to the ability to store and recall acquired knowledge (Ahmed & Inti, 2021). Gender differences in academic performance remain a debated issue, with mixed findings across studies (Kumar, 2022). While some research reports differences between male and female students, others find no significant variation in achievement or retention in experimental settings (Alemneh et al., 2023; Gero, Ephraim & Ponfa, 2025). This study therefore seeks to examine the effects of computer simulation and animation instructional packages within flipped classroom settings on Nigerian secondary school geography students' achievement and retention, with particular attention to gender differences.

Statement of the Problem

Geography remains a vital subject in the Nigerian secondary school curriculum due to its role in fostering environmental awareness, spatial reasoning, and national development (Olaniyi & Oladokun, 2021). However, in Jigawa State, as in many parts of Nigeria, students' performance in geography has been persistently low, with poor retention of learned concepts (Eze, 2021). This challenge has been attributed to factors such as inadequate qualified teachers, overcrowded classrooms, and reliance on traditional lecture methods, which are largely teacher-centred and offer limited opportunities for active learner engagement (Tofi, Usman & Lakpini, 2021)

The need to shift towards more interactive, learner-centred instructional approaches has therefore become urgent in order to improve both achievement and retention in the subject.

One innovative approach that has gained global attention is the **flipped classroom model**, which restructures learning by moving direct instruction outside the classroom often through digital resources and using classroom time for interactive, problem-solving activities (Ozyurt, 2022; Ruslan et al., 2022). Within this model, instructional technologies such as **computer simulation** and **computer animation** have shown promise in enhancing understanding and retention in various subjects. Computer simulation helps students visualise and interact with dynamic geographical processes, while animation enhances comprehension through motion graphics and multimedia presentation (Falode & Mohammed, 2023; Inyang, 2021). However, most existing studies have examined these technologies independently or compared them with traditional teaching methods, leaving a gap in understanding their comparative effectiveness when integrated into flipped classroom settings for teaching geography particularly within the context of Jigawa State.

Furthermore, while some research has suggested that gender difference may influence achievement and retention in science-related subjects, findings remain inconsistent (Kumar, 2022; Alemneh et al., 2023). Little is known about whether male and female students in Jigawa State respond differently to computer simulation and animation within flipped classrooms in geography.

Without this knowledge, policymakers, educators, and curriculum planners in Jigawa State may struggle to make evidence-based decisions on the most effective technology-mediated instructional strategies for improving students' academic achievement and retention. This study therefore filled this gap by comparing the effectiveness of computer simulation and animation instructional packages in flipped classroom settings on the academic achievement and retention of senior secondary school students in geography in Jigawa State.

Research Questions

The following research questions were answered in the study:

What is the difference in the mean achievement scores of geography students exposed to computer simulation packages in flipped classroom settings and those taught using lecture method?

What is the difference in the mean achievement scores of geography students exposed to computer animation packages in flipped classroom settings and those taught using lecture method?

What is the difference in the mean achievement scores of geography students exposed to computer animation packages in flipped classroom settings and those taught using lecture method?

What is the difference in the mean academic achievement of male and female geography student exposed to computer simulation and animation packages in flipped classroom settings?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

Ho1: There is no significant difference in the mean achievement scores of geography students exposed to computer simulation and animation instructional packages in flipped classroom settings and those taught using lecture method.

Ho2: There is no significant difference in the mean achievement scores of male and female geography students exposed computer simulation and animation instructional packages in flipped classroom settings.

Methodology

This study employed quasi-experimental research design. Specifically, pretest, posttest and post-posttest nonequivalent control group design. Intact classes were used to avoid disruption of normal lessons. During first week of the study, pre-test using Geography Students Achievement Test (GSAT) was administered to both experimental group one and two to ascertain

their performance at the beginning of the study so as to ensure equivalent, after which they were exposed to treatment for six weeks and at the end of which post-test was administered using (GSAT) to determine students’ academic achievement in geography.

Table 1: Showing Sample of the study The population of study comprised of 1125 State including 789 males and 336 females. However, the study has sample size of 238 drawn from six (6) Science Schools, three (3) for boys and three (3) for girls in the state which were randomly selected using hat and draw method without replacement. SS-II intact classes were used and four schools (two for boys and two for Girls) were assigned experimental groups and two (one for boys and one for Girls) were also assigned as control with the following table

Geography students in Birninn Kudu Jigawa

S/N	Schools	Male	Female	Total
1.	Group A Experimental	39	25	64
2.	Group B Experimental	58	33	91
3.	Group C Control	45	38	83
Total		142	96	238

Instrumentation

The instrument used in the study was Geography Students Achievement Test (GSAT) which was adapted from Falode and Mohammed, (2023) and used for pretest, posttest and posttest test (retention) academic achievement. The instrument consisted of 40 objectives (multiple types) test items each with four alternatives (A-D). The validity of the instrument Geography Students Achievement Test (GSAT) was determined by experts and finally all observations made were incorporated into the final draft with rational/face logical validity index $r = 82\%$. A pilot test was

conducted to establish the reliability of the instrument using test-retest method. Test-retest method was used and finally subjected to person product moment correlation (PPMC) to ascertain internal consistency with a reliability index ($r = 0.83$) indicating high reliability

Results and Discussion

The research questions raised were answered using descriptive statistic; (Mean and standard deviations), however the corresponding null hypotheses were analyzed using inferential statistic (independent z-test and ANOVA)

Research Question One:

What is the difference in the mean achievement scores of geography students exposed to computer simulation packages in flipped classroom settings and those taught using lecture method?

Table 4.1: Showing Mean Academic Scores of Students Taught Geography Using Computer Simulation Instructional Packages in Flipped Classroom Settings and Lecture Method

Groups Difference	N	Mean	SD	Std Error	Mean
Experimental group	64	24.16	3.9	0.53	5.9
Control group	83	18.26	4.2	0.47	
Total	155				

Table 4.1 the mean difference between the Experimental and control groups is 5.9 while the experiment control group has 24.16 mean with S.D of 3.9 and control groups has 17.26 mean with S.D of 4.2 indicating that their responses in the posttest are closely related. This indicates that there is difference in the mean academic achievement scores of geography students exposed to computer

simulation and lecture method in favour of experimental group

Research Question Two: What is the difference in the mean achievement scores of geography students exposed to computer animation packages in flipped classroom settings and those taught using lecture method?

Table 4.2:
Showing Mean Academic Scores of Students Taught Geography Using Computer Animation Instructional Packages in Flipped Classroom Settings and those Taught with Lecture Method

Groups Difference	N	Mean	SD	Std Error	Mean
Experimental group	91	25.11	4.3	0.46	6.01
Control group	83	19.1	3.8	0.34	
Total	174				

Table 4.2 the mean difference between the Experimental and control groups is 1.01 while the experiment control group has 25.11 mean with S.D of 4.3 and control groups has 19.1 mean with S.D of 3.8 indicating that their responses in the posttest are closely related. This indicates that there is difference in the mean academic achievement scores of

geography students exposed to computer simulation and those taught using lecture method.
Research Question Three: What is difference in the mean achievement scores of male and female geography students exposed to computer simulation instructional packages in flipped classroom settings

Table 4.3: Showing Mean Achievement Scores of Male and Female Students Taught Geography Using Computer Simulation Instructional Packages in Flipped Classroom Settings

Groups Difference	N	Mean	SD	Std Error	Mean
Male	39	25.11	4.22	0.46	1.0
Female	25	24.1	3.93	0.24	
Total	64				

Table 4.3 the mean difference between the Male and Female Experimental groups is 1.01 while the Male has 25.11 mean with S.D of 4.22 Female has 24.1 mean with S.D of 3.93 indicating that their responses in the posttest are closely related. This indicates that the difference is insignificant which shows that there is no difference in the mean

academic achievement scores of Male and Female geography students exposed to computer simulation
Research Question Four: What is the difference in the mean achievement scores of Male and Female Geography students exposed to computer animation packages in flipped classroom settings?

Table 4.4: Showing Mean Achievement Scores of Male and Female Students Taught Geography Using Computer Animation Instructional Packages in Flipped Classroom Settings

Groups Difference	N	Mean	SD	Std Error	Mean
Male	58	26.13	4.8	0.69	0.23
Female	33	25.9	4.3	0.47	
Total	91				

Table 4.4 the mean difference between the Experimental and control groups is 0.23 while the male has 26.13 mean with S.D of 4.8 and Female has 25. 9 mean with S.D of 3.91 indicating that their responses in the posttest are closely related. This indicates that the difference is insignificant which shows that there is no difference in the mean academic achievement scores of Male and

Female geography students exposed to computer animation.

Hypotheses

Ho1: There is no significant difference in the mean achievement scores of geography students taught using computer simulation and animation instructional packages in flipped classroom settings and those taught using lecture method?

Table 4.5: ANOVA Comparison on Mean Achievement Scores of Students Taught Geography Using Computer Simulation and Computer Animation Instructional Packages in Flipped Classroom Settings and Lecture Method

Groups	Sum of square	Df	Mean squares	F-ANOVA	Sig.2tail	Decision	Mean
Between groups	9024.979	2	43.12		158.123	0.000	
<i>Retained</i>							
Within groups	6622.016	236	23.115				
Total	15464.996	238					

Table 4.5 indicates that significant difference was found between the groups taught with computer simulation, computer animation instructional packages in flipped classroom settings and lecture method. Therefore hypothesis one (1) was rejected. Thus there is a significant difference in the mean achievement scores among students taught geography using computer simulation and

computer animation instructional packages in flipped classroom settings and those taught using lecture method

Ho2. There is no significant difference in the mean achievement scores of male and female geography students exposed computer simulation and animation instructional packages in flipped classroom settings and those taught using.

Table 4.6: ANCOVA Comparison between the Mean Achievement Scores of Male and Female Students Taught Geography Using Computer Simulation and Computer Animation Instructional Packages in Flipped Classroom Settings and Lecture Method

Source value	Type III sum of Squares	DF	Mean Square	F	P—
Corrected Model	5403.89a	5	1070.78	4.08	0.01
Intercept	691918.22	1	691918.21	26.34	0.001
Sex	227.31	1	227.31	0.87	0.35
Group	2167.39	2	1094.67	4.19	0.01
Sex* Group	2572.81	2	1281.40	4.99	0.001
Error	97119,38	235	258,98		
Total	799,408.5	238			
corrected Total	102423,29				

Significant at P >0.05 R Squared =0.05 (Adjusted =0.03)

Table 4.6 result of table 4.6 of the ANCOVA indicates that there exist a significant mean difference between Male and Female achievement scores in geography when exposed to computer simulation and computer animation instructional packages in flipped classroom setting and those taught using lecture method. The calculated value of intercept 0.001 is less than the alpha value of 0.05. However on individual analysis of the means achievement scores in geography on the two factors (sex and groups) significant difference exist when exposed to computer simulation and computer animation and those exposed to lecture method as the computed P-value 0.01 is less than 0.05. Therefore the null hypothesis is here by rejected.

Discussion of the Findings

The first findings also revealed significant a difference between the mean academic achievement scores of experimental and control group. This shows that there is difference in the mean academic achievement scores of

geography students exposed to computer simulation and lecture method in favour of experimental group. The finding agreed with the earlier findings of Olatunde-Aiyedun (2021) revealed a significant difference in the performance of those exposed to animation and conventional teaching method in favor of experimental group. Similarly, Ahmed and Inti (2021) revealed a substantial difference in the achievement of students exposed to animation and lecture method in favor of experimental group. The finding also is inline with the finding of Asogwa et al. (2022) found that computer simulation package increases achievement and retention in genetic concepts. Similarly Falode and Mohammed, (2023) disclosed that there was no significant difference between the mean academic achievement of students exposed to computer simulation and those exposed computer animation instructional packages in flipped classroom settings. The second findings disclosed significant difference between the mean achievement scores of Male and Female geography students exposed to computer simulation and computer animation instructional packages in flipped classroom settings and lecture method in favor of experimental groups.

The finding is in line with the earlier findings of Egbes, Ajaja (2023) revealed no significant difference between teaching method and sex on achievement and retention. Alemneh, Kidanmariam, Mengistie and Beyene (2023) in their study found no significant difference in the mean scores of male and female in experimental group. In addition, Gero, Ephraim and Ponfa (2025) in their study revealed that gender was not a significant factor of the achievement of students in chemistry. Therefore this shows that there is significant difference in the achievement of male and female students when exposed to computer simulation, computer animation and lecture method in favor of experimental groups.

Conclusion

The study conclude that, the use of computer simulation and computer animation instructional packages in flipped classroom settings enable students to become active participants during teaching and learning of Geography which in turn improved the academic achievement of Geography concepts. There is no doubt that the problem of poor

performance of students in geography will be reduced if the strategies are regularly adopted in teaching and learning of the subject and other related ones.

Recommendations

Based on the findings of the study, the following recommendations are made:

Geography teachers participate in regular in- service training and workshops focused on technology-based flipped classroom instructional strategies, enabling them to effectively integrate these approaches into their teaching practice to enhance students' academic achievement in Geography in Jigawa State.

Innovative teaching techniques like computer simulation and animation instructional packages should be integrated into teachers' training programs in order to prepare them for future integration into education in Jigawa State. Secondary school Geography Teachers undergo regular workshops on the use of simulation- and animation-based instructional packages within flipped classroom settings, as these approaches have been found to be gender-friendly and effective in boosting students' achievement in geography in Jigawa State.

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Unlocking opportunities through Utilization of Innovative Technology Resources for Effective School Health Education Programmes in Nigeria

By

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Abstract

The paper focused on unlocking opportunities through utilization of innovative technology resources for effective school health education programmes in Nigeria. Health education is primarily geared towards positive health behaviour change, which can highly be achieved when the innovative learning resources are mobilize and presented to the learners through meaningful approaches and strategies. Innovations are pivotal in enhancing health education by fostering interactive learning experiences and relevant skill development. This paper reviewed the concept of health education, discussed the goals of health education, components of school health education programme. The paper further reviewed the concept of innovative technology; it also pointed out the various types of innovative resources for health education in Nigerian schools. The benefits of using innovative Technology resources in school health education programme were discussed. The paper further highlighted the challenges on the use of innovative technology resources in teaching health education. Lastly, unlocking opportunities in relation to innovative technology resources were postulated. It was recommended among others that school health education programme in Nigeria should be transform in such a way that will address contemporary health challenges.

Keywords: *unlocking opportunities*, innovative technology, resources, school health education programme

Introduction

The reality of the double burden of diseases affecting Nigerians, calls for cost effective sustainable measures of addressing communicable and non-communicable diseases in the Nigerian schools. The School Health Program (SHP) was suggested as a key component of national health promotion programmes because when integrated across the risk factors, it rightly addresses the double burden of diseases (Mendis, 2016). The rationale for school health education is that, it improves academic performance, fosters essential life skills for lifelong health, reduces risky behavior and preventable diseases, promotes community well-being, and supports long term positive health outcomes. School health programme is aimed at the overall

wellbeing of the school population and their environs. Moronkola (2012) defined school health programme as an educational and health programme targeted at meeting the health needs of learners and staff at present and at the same time, laying good foundation for their future health status with the support of the home, community and government. Okueso and Akinwusi (2019) added that, school health education is primarily geared towards positive health behaviour change, which can highly be achieved when the innovative technology resources are unlock and presented to the learners through meaningful approaches and strategies. Such innovative technology resources are

pivotal in enhancing health education by fostering interactive learning experiences and relevant skill development. In a rapidly changing global landscape, technology plays an essential role in transforming education system, making learning more accessible, engaging, and efficient (William, 2021). However, Nigeria as the most populous country in Africa, faces daunting challenges in its educational sector, such challenges include the inadequate infrastructure, shortage of qualified teachers, and overcrowded classrooms. Historically, these challenges have limited the reach and quality of school health education programmes, particularly in rural and underserved regions (Okueso & Akinwusi, 2019).

Concept of innovative technology

Innovation is literarily means the introduction of new things, ideas or ways of doing things that has been recently discovered or identified. Hurasocaine (2014) explained innovation as the application of scientific and other organized knowledge in solving problems within and outside schools. Innovative technology is defined as technologies that are novel and have the potential to create value by improving existing processes, products, or services (Bessant & Tidd, 2015). They emphasize how innovation involves applying technology in a new and useful way to solve problems or meet needs. West and Gallagher (2006) defined innovative technology resources as the networks of technological assets, such as software, and hardware that enable organizations to innovate collaboratively and efficiently.

Kanter (2016) defined innovation in education as the introducing more technology in the classroom to create a blended classroom where students experience technology as they would in the real world stated that

the most innovative technologies often arise when diverse teams collaborate and combine their various technological and intellectual assets. The innovative technology resources in health education refers to new and advanced tools, platforms, and technologies that enhance the learning experience, improve access to health information, and promote better health outcomes. These resources often combine technology with educational strategies to engage learners, improve knowledge retention, and support decision-making in health-related contexts (Jung-Chul, Hyuk-Jae & Chul, 2021). The UNESCO's context for "innovative technology" is often in areas like Science, Technology, and Innovation (STI) for sustainable development, and the use of Information and Communication Technologies (ICT) in education, emphasizing innovations that accelerate progress and address challenges (UNESCO, 2022).

According to Adeniran (2022), the integration of technology in Nigerian education is not without its challenges. The digital divide remains a significant hurdle, especially for students and schools in rural areas where electricity supply is unreliable, and internet connectivity is either poor or non-existent. Many students still struggle to afford smartphones, laptops, or data subscriptions required for seamless online learning. Moreover, the lack of adequate government policies to support technology integration in education at the grassroots level hampers the full realization of its benefits.

Okueso and Akinwusi (2019) stated that some health educators in schools are often found utilizing existing technology resources designed for imparting health education messages rather than search for innovative technology resources that can help in developing intellectual skills to facilitate the decision

making process. Health education in Nigerian schools requires urgent transformation to address contemporary health challenges effectively. More so, the advancements in health education in Nigerian schools are imperative to equip students with essential knowledge and skills for healthy living. This has accelerated the adoption of various technological tools and platforms for effective health education. Jung-Chul, Hyuk- Jae and Chul (2021) explained that health education can be greatly enhanced by the integration of innovative technology resources. These innovative technology resources can revolutionize the learning experience for health education, which can simplify the means of acquiring knowledge and skills.

Types of innovative technology Resources

The following are some notable examples of innovative technology resources used in health education: Online Distance Learning, Virtual Reality (VR) and Augmented Reality (AR), Wearable Technology, Mobile and Portable Technology, Computer-Assisted Learning.

Online health Distance Learning: Delivery of online health courses has gained popularity in recent years, which allow students to access health educational materials and interact with instructors and peers from the comfort of their own homes. This may be facilitated by video conferencing and webinar platforms that enable live lectures, interactive discussions, and guest presentations, fostering collaboration and knowledge sharing among students and health educators (William, 2021). Online health courses offer interactive online courses focusing on various health topics, nutrition, wellness, or disease prevention.

Virtual Reality (VR): Virtual reality has revolutionized the way people teach and learn in the health education field. These technologies provide

students with immersive experiences through medical simulations that mimic real- world scenarios. More so, these technologies are used to replicate medical scenarios, enabling students to practice clinical skills such as resuscitation, intubation, and surgical procedures. This enables students to perform virtual surgeries and practice complex procedures in a risk-free environment where they can practice on virtual patients who cannot be harmed when they commit mistake (Pratt, Ives, Lawton, Simmons, Radev, Spyropoulou, & Amiras, 2018). Use of Virtual Reality (VR) provides immersive health education experiences where students can learn about anatomy and disease prevention interactively.

The results of a systematic review by Kononowicz, Woodham, Edelbring, Stathakarou, Davies, Saxena, Tudor, Carlstedt- Duke, Car and Zary (2019), which compared the virtual-patient education method with the existing traditional education method, it was found that the use of virtual patients was more effective in helping students to acquire clinical skills and knowledge compared to existing education methods.

Wearable Technology: Wearable devices, such as fitness trackers and smart- watches, can be used to monitor vital signs, activity levels, and other health metrics, providing students with firsthand experience in utilizing health monitoring tools. These devices allow students to gain real-time feedback and make informed decisions. This technology also promotes more active and engaged learning experience, as students can see the immediate impact of their actions (Wheeling, 2021).

Mobile health apps and Portable Technology: Mobile health apps and portable technology, such as tablets and smartphones, have transformed the way people access and share health messages. In health

education setting, mobile health apps can be used to access electronic textbooks, and health education videos. They also enable students to collaborate with their peers and instructors as in real time, regardless of their location. Also, well developed mobile health applications can help to educate users about health issues, track their wellness goals, or provide guide for healthy living.

Health mobile apps and innovative technologies can be adopted in teaching health education as Okueso and Akinwusi (2019) stated that students listen to presentation of health instructions through the use of health mobile application and various available appliances such as television, radio, film, slides, and tape recorder. With the innovation of these resources, the learners are actively involved in the learning process using various senses simultaneously. In radio or television, health education broadcast can be employed to augment health instruction in school, which may handle various aspect of health education such as nutrition education, consumer education, drug education (Okueso & Akinwusi, 2019).

Computer-Assisted Learning: Computer- assisted learning (CAL) refers to the use of computer technology to aid in the delivery of educational materials and facilitates learning. Within the realm of health education, CAL encompasses the utilization of various innovative technologies to engage students and promote active learning. One prominent example of CAL in the context of active learning is the use of "clickers" or other interactive technologies (Harless, Drennon, Marxer, Root & Miller, 2017).

Shaikh, Inayat, Awan, Santos, Choudhry, Waheed, Kajal and Tuli (2017) also revealed that learning through computer- aided instruction has advantage of being able to easily visualize complex procedures, and

its principal advantage may be excellent accessibility. The widespread use of the internet and various electronic devices for clinical education which traditionally could only be conducted in the practical room of school setting, can now be carried out at home, on the road, and above all, repeatedly at the pace of learning until the students are fully acquainted with the corresponding materials (Wang, 2001).

Clickers: held devices (also called Personal Response Systems (PRS) or Audience Response Systems (ARS) that allow students in a classroom to anonymously answer multiple-choice or true/false questions posed by the instructor. The instructor's computer collects these instant, anonymous responses, processes them into a summary like a histogram, and displays the results immediately on a screen, providing real-time feedback on class understanding and enabling discussions (Ke, 2018).

Gamification: Gamification is also a broad, new term which refers to using video game elements or mechanics (e.g., levels, badges, and points) in non-game contexts to make the environment (e.g., face to face or online class) more interesting for the users or the learners (Deterding, Sicart, Nacke, O'Hara, & Dixon, 2021).

Artificial intelligence: The role of Artificial Intelligence (AI) in education is gaining momentum in Nigeria. Adaptive learning platforms that use AI to personalize learning paths according to individual student needs are beginning to make their way into the Nigerian EdTech space. Data-driven decision-making, powered by analytics, is helping schools better understand student performance, learning patterns, and areas that require intervention. Moreover, the future of education globally is increasingly intertwined with emerging technologies

such as Artificial Intelligence (AI), for credential verification, and Big Data analytics for performance measurement (Auster, & Wylie, 2016).

Benefits of Using Innovative Technologies in School Health Education Programmes

Innovative technology resources can bridge the gaps in health education and address existing health challenges. Embracing innovative technologies can enhance learning experiences and outcomes. When integrating innovative technologies in Nigerian schools, schools can offer more comprehensive and wide array of benefits, revolutionizing the learning experience and preparing students for the dynamic landscape in terms of disease prevention and health promotion. Okueso and Akinwusi (2019) pointed that some of the benefits of using innovative technologies in school health improvements in the facilitation of learning and learners feedback, repeatable scenarios enable replicability or alterations in practice, elimination of human patient risk due to learner error.

Personalization of Learning Experience:

One of the greatest advantages of incorporating technology in school health education is the ability to personalize the learning experience for each student. With the use of adaptive learning platforms and intelligent tutoring systems, health educators in Nigerian schools can tailor the content and pace of instruction to match the individual needs and preferences of the learners. This not only increases student engagement but also improves learning outcomes (Okueso & Akinwusi, 2019).

Improvements in the Facilitation of Learning and Learners Feedback: Technology allows health educators to deliver content in a variety of formats, making it more engaging and accessible for students. Interactive videos, online quizzes, and virtual

simulations provide opportunities for active learning and immediate feedback. Similarly, data analytics and artificial intelligence can also be employed to analyze large datasets, and facilitate personalized learning experiences for students based on their individual progress and needs.

Repeatable Scenarios Enable Replicability or Alterations in Practice: Technology allows health educators to create repeatable scenarios that can be replicated or altered to meet the specific needs of the learners. This flexibility enables students to practice different approaches and techniques, enhancing their critical thinking and problem-solving skills. It also prepares them for the ever-evolving nature of the healthcare field.

Elimination of Human Patient Risk Due to Learner Error: Using technology is not only ensures patient safety but also allows students to learn from their mistakes and improve their performance. It's enable health professionals to be at their workforce with higher level of competence and confidence (Okueso & Akinwusi, 2019).

Emerging Issues on the Utilization of Technology Resource in Teaching Health Education

Utilization of innovative technology in Nigerian schools faces series of challenges. Some of the challenges according to Shaikh, Inayat, Awan, Santos, Choudhry, Waheed, Kajal and Tuli (2017), include: (1) Insufficient training for health education teachers (2) Poor infrastructure in many schools (3) Limited access to up-to-date health education materials (4) Inconsistent implementation of health education programmes (5) Poor policy (6) Poor finding

Insufficient training for health education teachers

Due to the advanced expertise requirement for effective school health education programmes, the

innovative technology resources are not readily available in schools and the approach cannot be creatively employed. Okueso (2009) lamented that many facilities that are necessary for effective teaching of health education, including qualified manpower for functional school health education programme are insufficient in many schools.

Poor infrastructure in many schools

The issue of poor health education infrastructure in many schools has been discussed by various authors, who often focus on the systemic challenges, such as lack of resources, outdated textbooks, broken or inadequate number of furniture, which has broader impact on students' well-being and academic performance (Tillery, 2019). Graham (2015) also lamented that many schools, particularly in low-income areas, lack the necessary infrastructure to provide adequate health education. These schools often have insufficient health education materials, outdated curricula, inadequate toilets, water supply and waste management equipment. Katz et al. (2013) noted that poor infrastructure in schools often leads to fragmented and inconsistent delivery of health education.

Limited access to computer assisted programme

Glanz, Rimer and Lewis (2012) reported that the limiting factors to the use of computer assisted in health education programme is the cost structure for implementing programme and are certainly changed by the use of new technologies, the cost of development and installation are high. Eng (2018) also mentioned that lack of access to computers devices resulted to stiff resistance from both the learners and the administrators.

Limited access to up-to-date health education materials

Lack of access to up-to-date health education materials in schools is a significant problem which hinders

effective health instruction and potentially impacting students' health and well-being. This shortage can lead to outdated curricula, inadequate resources for teachers, and a failure to address current health issues faced by students (Okueso & Akinwusi, 2019). Shaikh, Inayat, Awan, Santos, Choudhry, Waheed, Kajal and Tuli (2017) stated that lack of up-to-date equipment in schools can hinder the learning experience and prepare students inadequately for the modern workforce. Some areas where outdated equipment can be particularly problematic include: audio-visual centre, outdated lab equipment, and limited access to modern computers, software, and internet connectivity can hinder students' ability to develop essential digital skills.

Inconsistent implementation of health education programmes

Inconsistent implementation of health education programs can lead to diminished effectiveness, reduced student engagement, and a lack of sustained behaviour change. It can also create confusion and undermine the overall goals of promoting healthy lifestyles and preventing diseases (Tillery, 2019). Poor implementation of health education programs can lead to a multitude of negative consequences, including increased risk of preventable diseases, reduced public awareness, and hampered healthcare efforts. These programs can also lead to the stagnation of healthcare progress and even the reversal of gains made in health indicators (Okueso, 2009).

Poor policy

Poor policy formulation hinders technological innovation by creating uncertainty, a lack of clear regulatory frameworks, and misaligned goals, which stifles the creation, adoption, and diffusion of new technologies. Effective policies are needed to support innovation, encourage investment, address potential

negative impacts, and promote innovative technology. In addition, there is no way to be assured of successful policy in advance of trying it (Reigeluth & Karnopp, 2023).

Poor finding

Despite the promising potential of technology innovation in Nigerian schools, securing funding remains a significant hurdle. Governments fail to foster innovative technology due to factors like limited budgets, bureaucratic structures that stifle flexibility, weak leadership, a lack of strategic long-term planning, and the influence of special interest groups on policy-making. These internal weaknesses, alongside failures in creating strong collaborations between research institutions, industry, and government, hinder the development and implementation of new technologies within the public sector (Reigeluth & Karnopp, 2023).

Unlocking Opportunities through Utilization of Innovative Technology Resources in School Health Education Programmes

Utilization of innovative technology resources for teaching health education can offer the learners/clients, opportunities to demonstrate specific objectives of instruction as a result of active involvement in the teaching and learning process (Okueso, 2019). The following are some of the unlocked opportunities on the use of innovative technology resources in school health education programmes:

They enhance promotion of independent learning, because learners move in a manner necessary to solve a health problem which may facilitate the zeal for continuing health education.

As a student centered strategy, utilization of innovative technology resources facilitate concept formation and acquisition of process skills, which includes the skill of observation, summarization, conclusion making, which are ingredients for solving health problems

(Adeniran, 2022).

Used of innovative technology resources help students to identify problems as well as taken steps for finding solutions to the identified problems.

Lastly, it is new and unique which makes it appealing to students, hence, it serves as a means of motivating students to learn and also improve their participation in learning process (Adeniran, 2022).

Conclusion

In conclusion, utilization of innovative technology resources are necessary and important in helping students to develop skills of critical thinking and actively involves in various forms of school health programmes in spite of its uniqueness and relevance in a contemporary society.

Recommendations

There should be periodic training for health education teachers on the use of innovative technology resources.

Both federal and states ministries for education should transform school health education programmes in such a way that will address contemporary health challenges.

Each school should made computers aided resources available such as projected, internet facilities, tape recorder, flash drive and so on, for the effective health education programmes.

The curriculum developers should be periodically revising the health education curriculum to include contemporary issues to make it more relevant in addressing health problems of each part of the country

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The Contributions of Community Leaders in the Implementation of Community Development Projects in Gwale Local Government Area, Kano State, Nigeria

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Abstract

This study surveyed the contribution of community leaders in the implementation of community development projects in Gwale Local Government area, Kano State, Nigeria. The objectives of the study were to identify the categories of community leaders that supports the implementation of community development, determine the types of contributions of community leaders in the implementation of community development projects, assess the impact of the contribution of community leaders in the implementation of community development projects. Survey research design was adopted for this study with a population of 102 and the sample size of 92 drawn based on the guidelines of Research advisor (2006). A researcher-made questionnaire was used to collect information from the respondents named as Questionnaire on Contribution of Community Leaders in the Implementation of Community Development (QCLLCD) and was used to collect data for this study and validated by the supervisor and three experts. A reliability index of 0.87 was obtained using test re-test method. The findings of the study include among others; that the category of community leaders that supports the implementation of community development projects are well-to-do members of the community, politicians and academicians of various institutions. They contributed toward local resources mobilization, act as liaison between governmental and non-governmental agencies through enhancing community transformation; improving living standard and well-being within community, fostering social cohesion and harmony, promote unity. It was concluded that there were hindrances to community leaders from achieving a successful implementation of community development project, these are inadequate funding, high cost of labor, poor implementation of projects, poor monitoring and evaluation of community development projects and scarcity of local resources. The study recommends that more and dedicated community leaders such as Imams, and clerics, should be identified by the members of the communities and responsibilities aimed at improving the welfare of the people assigned to them in Gwale Local Government Area.

Keywords: Community Leaders, Community Development, Contribution, Impact, Implementation,

Background to the Study

Community leaders who are deeply committed to the welfare of their people and possess the ability to influence them tend to have the most significant impact on community development. Such leaders may include the Amir (Sarki), king's representative (Wakili), district head (Hakimi), Amir's Prime Minister (Waziri), town head (Maigari), ward head (Mai-Unguwa), religious leaders (Imams), elders, and other respected figures. They occupy a strategic position to enhance community readiness by leveraging their influence and networks to inspire direct action. According to Abiona (2009), community leaders function as volunteers and agents

of change, motivating and mobilizing people to improve their communities. They are well-acquainted with the cultural values, social organization, and structures of their communities, and often lead community-based organizations formed to raise living standards.

In the Nigerian context, community leaders are central actors in development projects, shaping the thoughts, ideas, actions, behaviours, and attitudes of community members. For development programmes to be effective, these leaders must be engaged at all stages. Mgbada and Agumagu (2007)

describe them as individuals capable of directing group activities toward shared goals, forming part of the local power structure, and often belonging to higher socio-economic classes. They ensure that development aligns with the needs of the group and influence the conduct of other community members. Mgbada (2006) further observes that even without formal positions, such leaders still wield considerable influence and serve as role models, offering guidance and setting examples others follow. In many communities, successful and sustainable development projects owe their progress to the presence of strong leadership structures. These leaders also preserve the norms and traditions of their communities while driving growth.

However, the way these leaders get into leadership positions in their communities is also very germane to the performance of these leaders in their various rural communities. Various community development literatures have been dedicated to community leaders and their contributions in local communities (Williams, 1989; Israel and Beaulieu, 1990; Ugboh, 2007; Zaharah and Abu, 2008; Ozor and Nwankwo, 2008). In their analysis of community leaders, Fariborz et al. (2009) states that “a community without leadership may not be equipped to mobilize resources or influence community planning which obviously is also an aspect of community development”. They further argued that, local communities, like other organizations cannot progress successfully without active and dynamic leaders who are willing and able to take initiative. To them also, the success of the local community initiative depends on the quality, creativity and commitment of its leadership in maintaining its daily affairs.

Moreover, involving local leaders in the planning process allows them to relay information on preparedness to the people and these efforts ultimately result in a more resilient community.

Akwa and Kpalo, (2013), Baba *et al.*, (2014), Mgbada and Agumagu, (2007), and Oladosu, (2000) have identified different roles performed by community leaders in Nigerian community development including pioneering of development projects; making decisions on different issues affecting the community; playing influential roles in sourcing for project funds; legitimizing of community development programmes; making decision on suitability of community projects; contributing land and other resources for the projects and mobilizing community members' participation in rural development projects. Ideally most community development projects in developing nations focuses on people's felt needs and basic amenities such as provision of good road, electricity, health clinics, markets, school's buildings and farm settlement among others these goals can only be achieved through the collective effort made by community leaders. For any rural community development to be successful, influential local leaders must be involved else they might undermine the progress of such projects. Therefore, any agency or organization coming up with a development programme/project for the community must initially “clear” with these influential local leaders, a process otherwise referred to as legitimization. In Nigerian context, it is saddening to recall that rural community development project was neglected by successive governments since colonial rule. For instance, while the colonial government concentrated their development projects such as roads, schools, hospitals, and pipe- borne water around the major cities and built network of roads to areas where they exploited our natural resources, the rural areas were completely left out.

The post- independence governments are not equally left out in the practice of rural neglect as only communities whose sons and daughters were in government benefited from development projects otherwise referred to as “national cake”. Even where good development programmes were designed for rural areas, they most of the time failed because there were no scientific and empirical studies of the target rural communities which should guide their implementation. Since the 1980’s, Nigeria and many African countries have experienced a rising wave of revolts and restiveness by some rural communities. Governments have not been able to tackle these crises because there were no reliable baseline studies on the problems of such rural people (Ovwigbo and Ifie, 2004).

However, despite the breadth of literature on leadership in community development, several gaps remain. First, most existing studies adopt a generalized national or regional perspective, neglecting to investigate how leadership operates in specific local settings with unique socio- cultural, political, and economic dynamics. Second, empirical evidence on the actual contributions of local leaders to the implementation not just initiation of development projects is scarce, especially in Northern Nigeria. Third, while past research often frames leadership roles in terms of influence and legitimacy, less attention has been paid to how these leaders practically navigate relationships with government agencies, development partners, and community members to drive project execution. In the case of Kano State and Gwale Local Government Area in particular—these gaps are even more pronounced. The literature does not sufficiently account for the distinctive challenges faced by leaders here, such as

political patronage systems, uneven distribution of government resources, and the lingering effects of historical neglect of rural and semi- urban areas. Furthermore, the micro- level leadership dynamics including decision- making processes, dispute resolution mechanisms, and the mobilization of both human and material resources remain underexplored. Therefore, this study addresses these gaps by examining, in depth, how local leaders in Gwale LGA contribute to the actual implementation of community development projects, how they act as intermediaries between government initiatives and grassroots needs, and how their unique strategies and influence shape project success. In doing so, it provides localized, evidence-based insights that are largely absent from the broader discourse on community leadership in Nigeria.

Although much research has examined the role of local leaders in community development projects, there is still a lack of understanding about their specific contributions to the implementation of developmental projects in Kano State, particularly in Gwale Local Government Area. Previous studies have generally explored leadership roles in broader or different contexts, without addressing the distinctive challenges and leadership dynamics in this area. This study seeks to fill that gap by focusing on how local leaders contribute to the success of community development projects in Gwale, providing new insights into how they facilitate project execution and act as intermediaries between government initiatives and community needs.

In Kano State and Gwale Local Government Area in particular, implementation of community development projects depends on organization and effective participation of the people in the

community enhanced by the free flow of communication in which it is made possible by the local leaders. The existence and contribution of community leaders enhance the status of community project and places them in a better position to qualify for governments, grants in aid to bring a community action. The local leaders sometime contributes towards liaising between agencies of development and their communities, settle disputes, arguments, misunderstanding between individual and between the community and government. Moreover, based on their influence can connect with government to bring development to the particular area. They can also be observed for external financial or technical aids as they have always used their best brains in the community to obtain their aim and objectives. They equally know the best approaches in bringing development into the community for assistance such leaders can as well promote extension work especially where they have been involved from the outset. It is against this background that, the researcher examined the contributions of community leaders in the implementation of community development projects in Gwale Local Government Area of Kano State, Nigeria.

Statement of the Problem

Every community requires developmental projects such as good roads, electricity, health clinics, modern markets, school buildings, quality education, security, and stable economic systems to thrive. These goals can only be achieved through the combined efforts of government agencies and community members. Effective leadership is critical to the success of such projects, as the presence of capable leaders often determines the status, acceptance, and sustainability of development initiatives. Ahmad and Bin Silong (2011) noted

that the success or failure of community development projects largely depends on the attitudes and capacities of community leaders toward change. The likelihood of success increases when the gap between leaders' attitudes and community members' expectations is minimized or closed entirely.

Local leaders in Nigerian communities not only mediate between residents and government but also resolve disputes, maintain peace, mobilize resources, and legitimize projects. Although several studies have examined the general role of local leaders in community development, most have focused on broader national or regional contexts without addressing the distinct realities of specific localities. In particular, there is limited empirical evidence on how community leaders in Kano State—and Gwale Local Government Area specifically—contribute to the *implementation* of development projects, as opposed to their initiation or planning stages. Existing literature also provides little insight into the practical mechanisms these leaders use to liaise with government bodies, mobilize community participation, and ensure project sustainability in this setting.

This gap in knowledge underscores the need for a focused study on Gwale LGA to identify the categories of community leaders involved in project implementation, determine the specific contributions they make, and assess the impact of these contributions on the success of community development projects. Addressing this gap will provide localized, evidence-based insights that can strengthen both policy formulation and community development practice in the region.

Objectives of the Study

The study was guided by the following research objectives:

What are the categories of community leaders in Gwale Local Government Area, Kano State?

What are the community development activities in Gwale Local Government Area, Kano State?

What are the impacts of the contribution of community leaders in the implementation of community development projects in Gwale L.G.A, Kano State?

Methodology

The research design used in this study is survey. Survey research design is a research approach which seeks for information about a population of the study which is based on responses of a sample selected from the population. The design was therefore used to survey the contributions of community leaders in the implementation of Community Development project in Gwale. Nworgu (2006) stated that, survey research design has to do with enquiring into the unknown. It is the search for solution to problems or answers to questions.

The population of this study comprises all community leaders in Gwale. The local government consists of the following wards: Gwale ward, Galadanci, Mandawari, Dandago, Sani-Mainagge, Kabuga, Gyaranya, Diso, Dorayi and Goron-Dutse. Therefore, the total number of community leaders in Gwale Local Government is 90. The table 1 below shows the population distribution per ward in Gwale. For the researcher to obtain an acceptable sample size; Krejcie and

Morgan Table, (2006) was used to determine the sample size of the study in which according to the table; when the population is 102 then the sample size would be 92. Hence, 92 local government community leaders were selected from Gwale. Simple random sampling technique was used to select sample of the study. According to Kerlinger (2010) this technique gives every individual member of the target population an equal chance of being selected in sample. The instrument used for data collection in the study was researcher-made questionnaire. It was named as "Questionnaire on Contribution of Community Leaders in the Implementation of Community Development (QCLLCD)".

The data collected from the respondents were analyzed using frequency counts, simple percentages, mean values, and standard deviation to facilitate a clear understanding and meaningful interpretation for the readers of the study. Frequency counts provided insights into how often specific responses were given, offering a straightforward overview of the data distribution.

Data Presentation and Discussion of Findings

The data collected was presented and discussed as follows:

Analysis of Demographic Data of the Respondents

Table 1: Demographic Data of the Respondents

S/no	Variables	Options	Frequency	Percentage	
1.	Age	a. 20-30	01	1.1%	
		b. 31-40	08	8.7%	
		c. 41-50	48	52.2%	
		d. 51 & above	35	38.0%	
2.	Gender	a. Male	83	90.2%	
		b. Female	09	9.8%	
3.	Marital Status	a. Single	01	1.1%	
		Married	88	95.7%	
		Widow	00	0.0%	
		Separated	03	3.2%	
		Educational Attainment	Primary	16	17.4%
		Secondary	53	57.6%	
		Tertiary	23	25.0%	

Source: Fieldwork (2023).

The table 2 shows the demographic data of the respondents; the age groups of respondents 20- 30 years is only 01 representing 1.1 % of the total number of respondents, 31-40 years are 08 with 8.7%, 41-50 years are 48 representing 52.2% while 51 and above are 35 which stood at 38.0%. From the table, it is evident that the majority of the respondents are within the age range of 41-50. It also revealed on gender distribution of the respondents that, 83 respondents representing 90.2% are male and only 09 respondents representing 9.8% are female. From the analysis of the table, it can be seen that male took the larger

chunk on the gender of the respondents. It was evident that under marital status of the respondents, 01 respondent representing 1.1% is single, 88 (95.7%) are married while only 03 respondents which are equivalent to 3.2% were separated, this shows that majority of the respondents are married as indicated in the table. The table also showed the educational attainment of the respondents in which 16 of the respondents with (17.4%) obtained primary certificate, 53 (57.6%) acquired secondary and (25.0%) obtained tertiary school certificate

Research Question One: What are the categories of community leaders in Local Government Area, Kano State?

Table 2: Categories of the Leaders

Sn	Variables	Options	Frequency	Percentage
	Category of Leader	a. King Representative (<i>Wakili</i>)	02	2.1%
	District Head (<i>Hakimi</i>)		10	11.1%
	Town Head (<i>Maigari</i>)		20	22.2%
	Religious Leader (<i>Imam</i>)		23	25,6%
	Others, (Specify Please)		37	41.1%

Source: Fieldwork, 2023

Table 2 shows that, in relation to categories of community leaders that supports the implementation of community development projects in Gwale Local Government Area of Kano State; among the respondents in the study area, 2 of the respondent equivalent to 2.1% are King representatives (*Wakilai*), 10 (11.1%)

were district head (*Hakimi*), 20 (22.2%) are town head (*Maigari*), 23 respondents with 25.6% are religious leaders (*Imams*) and 37 respondents with 41.1% are other well-to-do members of the communities, politicians and academicians of various institution

Research Question Two: What are the community development activities in Gwale Local Government Area, Kano State?

Table 3: Types of Contributions of Community Leaders in the Implementation of Community Development Projects in Gwale Local Government Area

Types of Contributions of Community	Responses									
	SA		A		D		SD		X̄	
	%	F	%	F	%	F	%	F	%	F
Community leaders contribute toward local resources mobilization.	29	31.5	52	56.5	11	12	0	0		3.45
Community leaders ensure the projects remain on track and align with community's goals and values.	33	35.9	35	38.0	24	26.1	0	0		3.45
They act as liaison between governmental and non-governmental agencies and the community for financial and technical assistance.	54	58.7	27	29.3	11	12	0	0		3.45
They mobilize community members toward the provision of scholarship to the poor students, free books and uniforms.	53	57.6	26	28.3	13	14.1	0	0		3.1413
of the community members for their social and economic benefits.	36	39.1	30	32.6	26	28.3	0	0		2.8261
Community leaders create awareness and understanding of existing conditions in the community relating to their lives.	29	31.5	52	56.5	11	12	0	0		3.4457
Community leaders mobilize financial and material resources to support the projects.	29	31.5	52	56.5	11	12	0	0		3.4457
Community leaders promote the principle of integration toward the implementation of community development.	27	29.3	54	58.7	11	12	0	0		3.1739
They determine feasible projects based on available resources.	26	28.3	36	39.1	30	36.6	10	10.0		2.8261
Community leaders formulate policies for community development.	29	31.5	32	34.8	21	22.8	10	10.9		2.4467
Average Mean										3.0806

Source: Fieldwork (2023).

Table 3 shows the community development activities in Gwale Local Government Area, Kano State. The average mean score for all the statements is 3.0806. The mean scores of the six statements were 3.45, 3.45, 3.45, 3.1413, 3.4457, 3.4457 and 3.1739 which revealed that the respondents agreed that they contributes toward local resources mobilization, act as liaison between governmental and non- governmental agencies and the community for financial and technical assistance, mobilize community members toward the provision of scholarship to the poor students, free books and uniforms, create awareness and understanding of existing conditions in the community relating to their lives, mobilize financial and material resources to support the projects and promote the principle of integration toward the implementation of community development. This is because of the fact that their respective means are above or around the grand mean of 3.0806. The respondents seem to disagreed totally with the fact that they ensure the projects remain on track and align with community's goals and values, acting as a team to consolidate and harness the energy of the

community members for their social and economic benefits, determining feasible projects based on available resources and formulating policies for community development, because the mean scores for these four statements are below the grand mean score of 3.0806.

The result shows that community leaders contributes toward local resources mobilization, act as liaison between governmental and non-governmental agencies and the community for financial and technical assistance, mobilize community members toward the provision of scholarship to the poor students, free books and uniforms, create awareness and understanding of existing conditions in the community relating to their lives, mobilize financial and material resources to support the projects and promote the principle of integration toward the implementation of community development in Gwale Local Government Area, Kano State.

Research Question Three: What are the impacts of the contribution of community leaders in the implementation of community development projects in Gwale L.G.A, Kano State?

Table 4: The Impact of the Contribution of Community Leaders in the Implementation of Community Development Projects in Gwale Local Government Area

Impacts of the Contribution of Community Leaders	Responses									
	SA		A		D		SD		X̄	
	F	%	F	%	F	%	F	%		
Contributions of community leaders promote rural-urban infrastructure in Gwale L.G.A.	27	29.3	62	67.4	3	3.3	0	0		3.6413
Contributions of community leaders enhance community transformation; improve living standard and well-being within the community.	28	30.4	60	65.2	4	4.3	0	0		3.6087
Contributions of community leaders promote the adaption of innovations among community members in Gwale Local Government Area.	35	38	51	55.4	6	6.5	0	0		3.4891
Contributions of community leaders in the implementation of community development increase production and income generation activities.	26	28.3	62	67.4	4	4.3	0	0		3.6304
They serve as the vehicle for enhancing community capacity and cohesion toward effective implementation of community development projects.	47	51.1	43	46.7	2	2.2	0	0		3.4457
They assist in understanding local needs, issues and relationships among people toward the implementation of community development projects.	52	56.5	29	31.5	11	12	0	0		3.5457
Contributions of community leaders foster social cohesion and harmony, promote unity and collaboration among diverse groups in Gwale.	25	27.1	56	60.9	11	12	0	0		3.1751
Contributions of community leaders bring effective community development projects implementation.	27	29.3	54	58.7	11	12	0	0		3.1739
They awaken the political consciousness of the people in Gwale L.G.A.	26	28.3	56	60.9	10	10.9	0	0		3.8261
They help evaluate decisions, goals and procedure for goal attainment in the implementation of community development projects in Gwale.	29	31.5	52	56.5	11	12	0	0		3.6157
Average Mean										3.5152

Source: Fieldwork (2023).

Table 5 shows the impacts of the contribution of community leaders in the implementation of community development projects in Gwale Local Government Area, Kano State. The average mean score for all the statements is 3.5152. The mean scores of the ten statements are 3.6413, 3.6087, 3.4891, 3.6304, 3.4457, 3.5457, 3.1751, 3.1739, 3.8261 and 3.6157, which were around the grand mean (3.5152). The grand mean score for all the statements is 3.5152 which clearly shows that community leaders promote rural-urban infrastructure, enhance community transformation; improve living standard and well-being within the community, promote the adaption of innovations among community members, increase production and income generation activities, serve as the vehicle for enhancing community capacity and cohesion, assist in understanding local needs, issues and relationships among people, foster social cohesion and harmony, promote unity and collaboration among diverse groups, bring effective community development projects implementation, awaken the political consciousness of the people and helps evaluate decisions, goals and procedure for goal attainment in the implementation of community development projects in Gwale Local Government Area of Kano State.

Conclusively, the data revealed that community leaders significantly impacted to community development projects toward promoting rural-urban infrastructure, enhancing community transformation; improving living standard and well-being within the community, promoting the adaption of innovations among community members, increasing production and income generation activities, serve as the vehicle for enhancing community capacity and cohesion,

assisting in understanding local needs, issues and relationships among people, fostering social cohesion and harmony, promote unity and collaboration among diverse groups, bringing effective community development projects implementation, awaken the political consciousness of the people and helps evaluate decisions, goals and procedure for goal attainment in the implementation of community development projects in the study area.

Findings

The following were the findings of this study: The category of community leaders that supports the implementation of community development projects are well-to-do members of the community, politicians and academicians of various institutions in Gwale Local Government Area, Kano State.

Community leaders in Gwale contributes toward local resources mobilization, act as liaison between governmental and non-governmental agencies and the community for financial and technical assistance, mobilize community members toward the provision of scholarship to the poor students, create awareness and understanding of existing conditions in the community, mobilize financial and material resources to support the projects and promote the principle of integration toward the implementation of community development within the local government area in Kano State.

Community leaders significantly impacted to community development projects toward promoting rural-urban infrastructure, enhancing community transformation; improving living standard and well-being within community, promoting the adaption of innovations among community members, increasing production and income generation activities, serve as the vehicle for enhancing community capacity and cohesion, assisting in understanding local needs, issues and relationships among people, fostering social cohesion and harmony, promote unity and

collaboration among diverse groups in Gwale Local Government Area of Kano State.

Conclusion

This study was concerned with finding out the contribution of community leaders in the implementation of community development project in Gwale Local Government area. The major findings revealed that, the category of community leaders that supports the implementation of community development projects are well-to-do members of the community, politicians and academicians of various institutions. The study found out that, they contribute toward local resources mobilization, act as liaison between governmental and non- governmental agencies and the community for financial and technical assistance. Their contributions significantly impacted to community development projects toward promoting rural-urban infrastructure, enhancing community transformation; improving living standard and well-being, fostering social cohesion and harmony, promote unity. Different challenges were identified as hindrances to community leaders from achieving a successful implementation of community development project, these are inadequate funding, high cost of labor, poor implementation of projects, poor monitoring and evaluation of electoral malpractices, inadequate communication equipments, lack of interest and self-centeredness of some local leaders affects community leaders in the implementation of community development projects in the study area.

Recommendations

Based on the research findings, the researchers hereby make the following recommendations: Kano State Government should strengthen the involvement of all categories of into community development levels at state and local government levels for effectiveness and sustainability of community development projects and programmes. community development projects, scarcity of local resources, lack of maximum cooperation among community members, Government at all levels should support community leaders with training and resources to improve their capacity for mobilizing funds, liaising with agencies, and creating awareness, ensuring effective implementation of community development initiatives.

Kano state government and non- governmental organisations (NGOs) should leverage on the influence of community leaders to promote unity, innovation adoption, and income- generating activities that improve infrastructure, social cohesion, and overall living standards.

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Absenteeism and Academic Underachievement among Senior Secondary School Students in Kano Municipal Education Zone: A Descriptive Survey

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Abstract

The study is a descriptive survey of absenteeism and academic underachievement among senior secondary school students in Kano Municipal Education Zone. Two research objectives, one research question and one hypothesis were formulated to guide the conduct of the study. A descriptive survey design was adopted. A total population of six thousands, one hundred and thirty- one (6,131) underachieving pupils (those who failed qualifying examination) were used as the population of the study, and three hundred and sixty-five (365) were drawn through stratified random sampling technique as a sample of the study. Data was collected using absenteeism and academic underachievement questionnaire which has face and content validity by expert and a reliability of stability which was done through test- re test method with r- value of 0.84. Data was analyzed using descriptive statistics of frequency and percentage for research question one, and t- test for independent samples to test the hypothesis one. Findings of the study revealed that there is high prevalence of school absenteeism among underachieving students in kano municipal education zone and there is no significant difference between male and female underachieving senior secondary school students in Kano Municipal education zone in school absenteeism. It was concluded that school absenteeism prevails among underachieving senior secondary school students in Kano Municipal Education Zone. It was recommended among others that stakeholders should raise awareness about the negative impact of absenteeism on outcomes of qualifying examination through guidance and counseling committee in the schools in order to minimize high rate of failure in the examination

Keywords: *Absenteeism*, Academic underachievement, Deviant behaviour and Qualifying examination

Introduction

The success or failure of an individual in school is largely associated with the behavior of an individual. This is because, behaviour, attitude and interest are what help and motivate student success or failure academically. Behavioural problems in students, such as school absenteeism, deviant behavior and among others do not enable students to perform well academically, which in many instances make the students to abandon their studies and the whole school, to engage in many gang groups, drug abusers, smokers, fornicators, stealing, general violence, idleness and among others. Good

behaviour makes the students to concentrate well and learn better in school, and that will help him/her to graduate with good grades, to have the chance and ability to further their studies in to tertiary institution to become good productive members of the society.

There has been a general concern in recent times in educational arena regarding academic performance of underachieving students. Underachievement has long been acknowledged problem for some students. These students may not only become relatively non-productive members of the society but also, they have potential personal behavioural problem (- Floet, Schemer and Grossman, 2020-).

Some school children exhibit a range of problem behaviour that may be a burden not only for parents and teachers but even the community. However, the prevalence of behavioural problems among students varies widely depending on gender difference, peer group relations and family characteristics (Sousa, 2022).

Absenteeism is an undesired student behaviour which might arise from several factors, and might affected the academic success of the students in a negative way (Dube, 2019). Many students pay little or no attention to their studies and may also not be regular at school. As a matter of the fact some of them could abandon the class room to engage in non-profitable tasks like bullying, stealing, gossiping, and unwholesome group behaviour (Adesemowo, 2019). Teenagers start to go through a tough period where they try to be independent and find their identities, resorting to violence, taking part in the gang activities, and using drugs some times, are relatively higher in this period. If the student involve in peer relation with bad influence in this period, he/she will constitutes the turning point of his/her life, and may develop unwillingness to make him/her to go to school which shows a tendency towards absence from school.

Absenteeism affects the student academic achievement, difficulty in keeping accurate records, reduce ability to meet instructional targets and damage school reputation. Studies have shown that attendance of students have positive relationship with their academic performance (Emote, 2015)

. Students who are frequently absent from school have more difficulty forming relationships and participating in school activities. These students feel disconnected from academic activities and believe that, the lesson are not relevant to their lives, in addition they may spend less time in extracurricular activities, which reduce their chances to discover their talent and develop their skills outside the class room. However, students who are habitual absentees are not to getting the opportunity to gain support from teachers and their peers. Also students who are noted for exhibiting negative behaviour in school will not have the chance to be friend to students that excel academically (Adesemowo, 2019).

Academic underachievement is an issue facing parents, educators and the community as a whole which is most of the time causes by school absenteeism, and as such academic failure may lead to so many problems such as stealing, smoking, drug abuse, school dropout, vandalism, general violence and among others. That is why an investigation of prevalence of absenteeism among underachieving senior secondary schools students is needed. The School absenteeism affects the academic success of the students in a negative way for not be regular at school, and may engage in no profitable tasks with friends, which may result to poor academic achievement. Donal (2020) define academic underachievement as performing below potential while Reis and McCoach (2019) define it as a discrepancy between ability and achievement.

From these definitions it can be deduced that underachievers are a diverse population, and that both gifted and non- gifted learners can underachieve.

Academic underachievement is an emotion based problem that applies to pattern of behaviours that occurs both inside and outside the school. Academic underachievers have the capability to do well academically, but because of some certain problems they display, and work they engage far below their potential, make them to perform poorly academically. They understand what they need to do intellectually, but their behaviour is what lack for their motivation academically. Underachievers may want do well, but their behavioural problems and some influences of adolescent period make them to resign to detachment and the sentiments of “I do not care” As this continues, the teenager becomes an adult which lack motivation in life and becomes a habit pattern in making harder in the adult stage to change (Connor, 2022). Sousa (2022) observes that academic underachievement is caused by behaviour not an attitude or set of work habits.

Statement of the Problem

A strong and effective education can help boost the development of the country. However, academic failure is one of the major problems that families, society and the government are worried about. At the end of every instructional period SS 2 students in public senior secondary schools in Kano state comes to write a qualifying examination. Each year it has been recording a persistent increase in the rate of poor performance for example, 5112 students failed qualifying examination in Kano municipal education zone out of 9141 students in 2019, 5958 students failed in 2021 out of 10508 students, 6059 students

also failed qualifying examination out of 9306 in 2022 and 6131 out of 12063 failed qualifying examination in 2023 (Ma’aruf, 2024 & Abubakar, 2025). This failure is mostly attributed to school absenteeism (Ma’aruf, 2024). This problem and many more physically, emotionally and psychologically problem affect the academic performance of the students in the school (terminal, qualifying and senior secondary school certificate examination).

School absenteeism may leads to academic underachievement as such academic underachievement which may also leads to so many problems such as school dropout, engagement in gang groups, vandalism, drug abusers, smokers, stealing, armed robbery, fornication, idleness, general violence and among others. This causes trouble to themselves, their parents, relatives and the society as a whole. Many of these secondary school graduates do not further their education to tertiary education due to failure in their qualifying examination and most of them roam the streets without any engagement to be occupied that will reduce idleness among them and they can easily exposed to various types of behaviour problems such as drug abuse, sexual assaults, stealing, vandalism and among others. These problems may last up to adulthood stage, and these may even turn into hardened criminals. Also usually researchers and educators are more concerned with pedological issues in examining the causes of failure and underachievement. Observations revealed that, rarely do researchers care about the behavioural factors such as school absenteeism. It is against this problem, the researcher investigated the prevalence of school absenteeism among underachieving senior secondary school students in Kano Municipal Education Zone.

Objectives of the study:

The study aims at investigating the prevalence of absenteeism and academic underachievement problems among senior secondary school students in Kano Municipal Education Zone.

Thus, the objectives of the study are to Determine the prevalence of school absenteeism among under-achieving senior secondary school students in Kano Municipal education zone.

Determine gender difference in school absenteeism among underachieving senior secondary school students in Kano Municipal education zone.

Research question

This study answered the following research question:

Does school absenteeism prevail among underachieving senior secondary school students in Kano Municipal education zone?

Research hypothesis

There is no significant gender difference in school absenteeism among underachieving senior secondary school students in Kano Municipal education zone?

Methodology

Descriptive Survey design was used in this study. According to Bichi (2004), the descriptive survey

design is one in which a group of people or items are studied by collecting and analyzing data from only a few people or items considered to be representative of the entire population or group. And to enable the researcher to administer questionnaires to many respondents at the same time in selected senior secondary schools in Kano Municipal who fall within the sample of the study.

The population for this study involved (males and females) senior secondary school students in government owned senior secondary schools in Kano Municipal Education zone those who failed Qualifying Examination in 2023/2024 session. Moreover, Kano Municipal Education zone consists of forty-three (43) senior secondary schools, with a total population of six thousand, one hundred and thirty-one thousand (6,131) students who failed 2023/2024 Qualifying Examination. (Kano Educational Resource Department, 2024) qualifying examination result. Also the population is heterogeneous in its nature, which comprises both sexes of male and female SS3 students with an average age of (15-17) years.

Findings and discussion

Research question one: Does school absenteeism prevail among underachieving senior secondary school students in Kano municipal education zone?

Table 1: Prevalence of School Absenteeism among Underachieving Senior Secondary School Students in Kano Municipal Education Zone

S/N	Absenteeism	Frequency	Percentage (%)
1	Those without school absenteeism	172	47.0%
2	Those with school absenteeism	193	53.0%
	Total	365	100.0%

Table 1: indicated that, majority of the respondents numbered 193 representing 53.0% have prevalence of school absenteeism while the remaining respondents numbered 172 representing 47.0% have no prevalence of school absenteeism. With regard to this finding school absenteeism prevailed among underachieving

senior secondary school students in Kano municipal education zone.

Testing hypothesis one: There is no significant difference between male and female in school Absenteeism among underachieving senior secondary school students in Kano Municipal Education Zone.

Table 2

Independent t-test Summary of Difference on School Absenteeism between Males and Females Underachieving Senior Secondary School Students in Kano Municipal Education Zone.

Gender	N	Mean	S.D	t	df	p	Sig-level
Male	134	24.81	5.292	4.76	191	.849	.05
Female	59	24.10	5.539				

Table 2 above shows the result of the independent t-test on gender difference, of school absenteeism between males and females underachieving senior secondary school students in Kano Municipal. The mean of males is (24.81) and that of females is (24.10). This means that, the statistical computation of independent t-test ($t = 4.76$, $p = .849$, $p > .05$) revealed that there is no significant difference between males and females underachieving senior secondary school students on school absenteeism in Kano Municipal education zone since $p = .849 > .05$. Therefore, the null hypothesis is accepted. The study revealed that there is no significant difference between male and female in school absenteeism among underachieving senior secondary school students in Kano Municipal Education Zone based on the obtained result. This was in line with the study conducted by Gaukler, (2015) on gender differences of absenteeism Related to school Aged Children and Adolescents.

underachieving senior secondary school students in Kano Municipal education zone. Also there is no significant difference in school absenteeism among males than females underachieving senior secondary school students in Kano Municipal education zone.

Recommendations

Based on the finding and conclusions drawn in this study, the following recommendations are made:

Since there is prevalence of school absenteeism in senior secondary schools in Kano Municipal Educational Zone, there is need for all stakeholders in the study area to raise awareness about the negative impact of school absenteeism on academic achievement through mass media and guidance and counseling committee in the schools, in order to avoid high rate of failure in qualifying examination.

Senior secondary schools in Kano Municipal Educational Zone should improve their disciplinary measures against students that are not coming to school regularly in order to minimize the rate of failure in Qualifying examination, WAEC and NECO.

Weekly or monthly review of school register should consider and also a counselling services should be offered to students with high number of absenteeism

Conclusions

Based on the findings of the study it is concluded that school absenteeism prevails among

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Overview of Measurement of Creativity and Differential Aptitude Tests as a Means of Assessing General and Special Abilities

By

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Abstract

This paper aims to explore the theoretical foundations and measurement approaches of creativity and differential aptitude, and to evaluate their combined utility in assessing individual potential. The study seeks to define creativity and its core attributes; review psychological theories and models underpinning creativity, examine the nature and structure of Differential Aptitude Tests (DAT), and analyse the benefits of integrating creativity and aptitude assessments. This conceptual review draws upon existing scholarly literature, standardized assessment manuals, and empirical findings to synthesize best practices in the measurement of creativity and aptitude. Creativity involves producing novel and appropriate responses to open-ended tasks, influenced by personality, cognitive processes, and environmental factors. DAT assesses domain-specific skills such as verbal reasoning, numerical ability, and spatial relations, and is widely used in educational and vocational contexts. Both assessments have demonstrated predictive validity for academic and career success, yet each has limitations, including cultural bias and scope constraints. Integrating them offers a more comprehensive profile of individual strengths. Based on the findings it was concluded that a combined approach to creativity and aptitude measurement enables educators and employers to make informed decisions regarding talent development, curriculum design, and career guidance. The study recommends that, educational stakeholders should incorporate both creativity and aptitude assessments into student evaluation frameworks, ensure cultural fairness in testing, and leverage emerging technologies such as digital assessment platforms.

Keywords: Creativity, Differential Aptitude Tests, Educational Assessment, Validity, Reliability

Introduction

Creativity is the production of novel and appropriate responses, products, or solutions to open-ended tasks. Although the response must be new, it cannot be merely different; the nonsensical speech of schizophrenic may be novel, but few would consider it creative. Thus, the response must also be appropriate to the task to be completed or the problem to be solved; that is, it must be valuable, correct, feasible, or somehow fitting to a particular goal. Moreover, the task must be open-ended (heuristic), rather than having a single, obvious solution (purely algorithmic). Ultimately, a response or product is creative to the extent that it is seen as creative by people familiar with the domain in which it was produced. This paper argues that

integrating creativity assessments with differential aptitude testing offers a more holistic and effective approach to identifying and nurturing individual strengths. It draws on psychological theories, standardized assessment tools, and empirical studies to present a conceptual review of the topic. The study seeks to: (i) define creativity and its core attributes, (ii) review psychological theories and models underpinning creativity, (iii) examine the nature and structure of Differential Aptitude Tests (DAT), and (iv) analyse the benefits of integrating creativity and aptitude assessments. This is a conceptual review that synthesizes

peer-reviewed literature, standardized test documentation, and theoretical perspectives. It does not present new experimental data but evaluates existing knowledge to provide practical recommendations.

Creativity is challenging to understand. Different types of thought are expressed to understand creativity from various aspects. Many psychologists agree that creativity plays a crucial role in generating new thoughts, transforming old things into new ones, and building relationships with unrelated objects. Some psychologists have expressed their views to clarify the idea of creativity:

Thurston (1955) described creativity as “any action that is creative if it provides an immediate solution through innovative thinking.” Kim (2009) suggested that “creativity is the essence of making pre-existing understanding errors un-received and rare elements in their improvement by reviewing the concepts.” Bartlett (1968) defined creativity as “bold thinking,” which means thinking beyond the mainstream, experiencing new things, and integrating present relationships with future ones. Rollo (1960) stated, “creativity is the process of bringing something new into existence. It requires passion and commitment, bringing awareness to what was previously hidden and pointing to new life.” According to Kim (2005), creativity has four components:

Continuity: A creative child can consistently change in a useful manner, generating different types of ideas continuously.

Flexibility: Creativity in a person refers to self-control, foresight, and considering others’ likes and dislikes. Such a person adapts their thoughts according to time and circumstances.

Originality: A creative child does not adhere to

old ideas but develops original thoughts. This child is strong-willed, industrious, and courageous, eager to start tasks independently, and often holds opinions different from other children.

Expansion: A creative child can exaggerate any matter or event, possesses a rich vocabulary, and has an interesting way of expressing ideas.

Various theories of creativity offer unique perspectives on what fosters creativity in individuals. Some of the theories include:

Holistic Approach to Creativity: Proponents like Johann Wolfgang von Goethe, Immanuel Kant, Wolfgang Köhler, and Kurt Koffka argue that creativity involves various factors influencing the creative process, such as abilities, skills, personality traits, motivation, and creative experiences.

Psychoanalytic Theory of Creativity: Proponents like Freud, Jung, Kris, Rank, Adler, and Hammer believe that creativity arises as a reaction to difficult circumstances or repressed emotions. According to this theory, individuals retreat from their surroundings during challenging situations or traumatic events and rely on their creative side to find solutions or express repressed emotions (Baer, 2009).

Personality Traits Theory of Creativity: Figures like Raymond Cattell, Eysenck, McCrae, and Costa suggest that creativity is determined by personality traits such as imagination, ingenuity, inquisitiveness (Gage & Berliner, 1994), emotionality, self-confidence, diligence, critical thinking, boldness, independence, flexible thinking (Fraise, 1982), receptivity, dominance, and initiative. Researchers also mention sensitivity to problems, a broad range of interests, originality, eccentricity, and usefulness (Gage & Berliner, 1994).

Humanistic Perspective of Creativity:

Proponents like Carl Rogers and Abraham Maslow propose that an active creative force within each individual, often called the "self," seeks expression and growth. This perspective, known as the third force, emphasizes human potential, self-awareness, and free will, viewing humans as innately good. Maslow notes that self-actualized individuals have realistic perceptions, are spontaneous, easily accept themselves and others, are creative, and appreciate life's positive aspects, like privacy and independence. The humanistic perspective links creativity to creative thinking, defined as the highest form of productive thinking (Jovaisa, 2001).

Differential aptitude tests (DAT) are instruments used to determine and measure an individual's ability to acquire specific skills through future training. The DAT were developed to test learners in the General Education Training (GET) phase and the Further Education Training (FET) phase. For each phase, two tests were developed: a standard form for general use and an advanced form for learners with favorable educational opportunities. According to Vosloo (2000), the full series comprises the following:

Differential Aptitude Tests Form R – (Grades 7–10 standard form): Measures the aptitude of learners in Grades 7–10 with favorable educational opportunities.

Differential Aptitude Tests Form S – (Grades 7–10 advanced form): Also used to test Grade 7 learners' aptitudes, assuming they had access to relatively good educational opportunities.

Differential Aptitude Tests Form K – (Grades 10–12 standard form)

Differential Aptitude Tests Form L – (Grades 10–12 advanced form)

The DAT measures a person's ability in different areas, making it a "potency" test. The skills and abilities measured are essential in multiple educational and professional situations. DAT is a series of tests for personnel and career assessment, designed to measure an individual's ability in various fields. Employers use these tests to assess potential employees' abilities and determine their suitability for specific positions. Initially launched in 1947 to support career guidance and vocational counseling for students, the DAT's use has expanded to measure an individual's general and specific mental abilities required for success in many job roles and training courses. In-depth research supports the increased usage of ability tests, showing that mental ability tests are highly predictive of performance.

The test covers several areas, including Verbal Reasoning, Numerical Ability, Abstract Reasoning, Perceptual Speed and Accuracy, Mechanical Reasoning, Space Relations, Spelling, and Language Use. The tests are performed under exam conditions and are strictly timed, with all questions having definite right or wrong answers. Few candidates usually complete the entire test, as questions typically become progressively more difficult. The test is also age-related.

Comparative Analysis of Creativity and DAT Measurement

While creativity and DAT assessments are often discussed separately, their combined use offers distinct advantages. Creativity tests, such as the Torrance Test of Creative Thinking (TTCT), emphasise divergent thinking, originality, and flexibility. DAT focuses on domain-specific aptitudes like numerical reasoning and spatial relations. Both rely on standardised

administration procedures and should meet psychometric standards of validity and reliability. Reliability ensures consistency of scores across time and contexts, while validity confirms that the tests measure what they purport to measure. Creativity assessments may face challenges of subjectivity and cultural bias, while DAT may be limited in capturing non-cognitive skills. When combined, these tools can inform curriculum design, targeted interventions, and personalised career guidance, thereby aligning learners with suitable educational and vocational pathways.

How are Creativity and Differential Aptitude Tests Measured?

Measurement of Creativity

The most common forms of creativity assessment involve objective measures, such as asking individuals to produce numerous ideas in response to a stimulus question, and self-reported measures, such as providing a list of achievements. An alternative is to gather perceptions from those outside the creative process.

Psychologists who study creativity are passionate about measuring creativity or determining how to accurately measure originality and novelty. The following are some tests used to measure creativity:

Guilford Test of Divergent Thinking: In 1967, creativity psychology pioneer J.P. Guilford developed a test to measure divergent thinking, calling it Guilford's Alternative Uses Task. Test takers list as many possible uses for a common object, such as a cup, paperclip, or newspaper. Scoring comprises four components:

Originality: Based on each response compared to the total responses from a specific group. Responses given by 5% of the group are unusual (1 point); responses given by only 1% are

unique (2 points).

Fluency: Scores relevant answers.

Flexibility: Based on the variety of categories.

Elaboration: Based on the amount of detail in the response.

Torrance Test of Creative Thinking (TTCT):

This test, developed by psychologist E. Paul Torrance, builds on Guilford's research. The TTCT attempts to psychometrically measure divergent thinking and other problem-solving skills. The reliability and validity of the TTCT have made Torrance nationally and internationally known, often referred to as the "father of creativity research." TTCT is the most well-known and widely used test for measuring creativity (Baer, 2009; Kim, 2006; Wechsler, 2002). The test is divided into two parts: figural and verbal.

Figural: Consists of three tasks: picture construction, picture completion, and repeated figures of lines or circles. In picture construction, participants receive a pear or

Verbal: Contains seven subsets: asking, guessing causes, guessing consequences, product improvement, unusual uses, unusual questions, and just suppose. Subsets are scored based on fluency, flexibility, and originality, with elaboration as an optional score. These scores are accumulated across all subsets and may be converted to standard T scores if a normative reference is designed.

Measurement of Differential Aptitude Tests

jellybean shape and must create a picture from it. In the picture completion and repeated figures tasks, participants complete 10 incomplete pictures or figures.

The Differential Aptitude Tests (DAT) are carefully constructed to help individuals understand their abilities. It consists of seven

different tests, and individuals may be tested on all or various sections depending on the program they are applying for. According to Jack (2001)

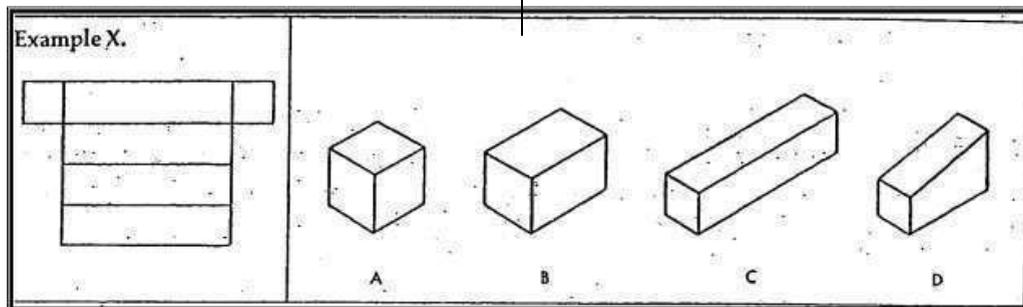
the following table provides an example of how the DAT is constructed:

S/N	Test Name	Number of Items	Time to Complete
1	Verbal Reasoning	50	30 minutes
2	Numerical Ability	40	30 minutes
3	Abstract Reasoning	45	20 minutes
4	Mechanical Reasoning	70	30 minutes
5	Space Relations	60	25 minutes
6	Spelling	90	10 minutes
7	Language Use	60	25 minutes

Each test is unique and measures different skills, providing a comprehensive understanding of an individual's strengths and areas for development. The results from the DAT can help guide career choices and educational paths, ensuring individuals are well-matched to their roles and fields of study.

Space Relations

This test consists of 60 patterns which can be folded into figures. To the right of each pattern there are four figures. You are to decide which one of these figures can be made from the pattern shown. The pattern always shows the outside of the figure. Here is an example



Source: Jack (2001)

In example X, which one of the four figures—A, B, C, D—can be made from the pattern at the left? A and B certainly cannot be made; they are not the right shape. C is correct both in shape and size. You cannot make D from this pattern.

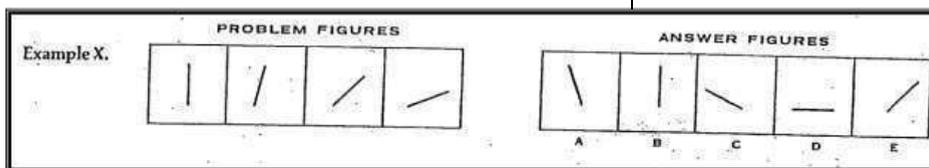
In Example Y all the figures next to the pattern are correct in shape, but only one of them can be made from this pattern. Note that when the pattern is folded, the figure it makes will have three grey surfaces. Two of these will be the largest surfaces, either of which could be the top or the bottom of a box. The other will be one of the smallest surfaces, which would be one end of the box. Now look at the four figures:

Figure A is wrong. The long, narrow side is not grey in the pattern and the largest surface must be grey Figure B is wrong. The largest surface must be grey, although

the grey end could be at the back Figure C is wrong. The grey top and end are all right, but there is no long grey side in the pattern. Figure D is correct. A large grey surface is shown as the top, and the end surface shown is also grey. So, you see, all four figures are correct in shape, but only one—D—show the grey surfaces correctly.

Abstract Reasoning

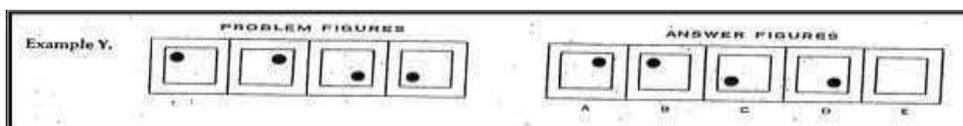
In this test you will see rows of designs of figures like those below. Each row across the page is one problem. You are to mark your answers on the Answer Sheet. Each row consists of four figures called Problem Figures and five called Answer Figures. The four Problem Figures make a series. You are to find out which one of the Answer Figures would be the next (or the fifth one) in the series of Problem Figures. Here are two examples



Source: Jack (2001)

In Example X, note that the lines in the Problem Figures are falling down. In the first square the line stands straight up, and as you go from square to square the line

falls more and more to the right. In the fifth square the line would be lying flat, so the correct answer—chosen from among the Answer Figures—is D



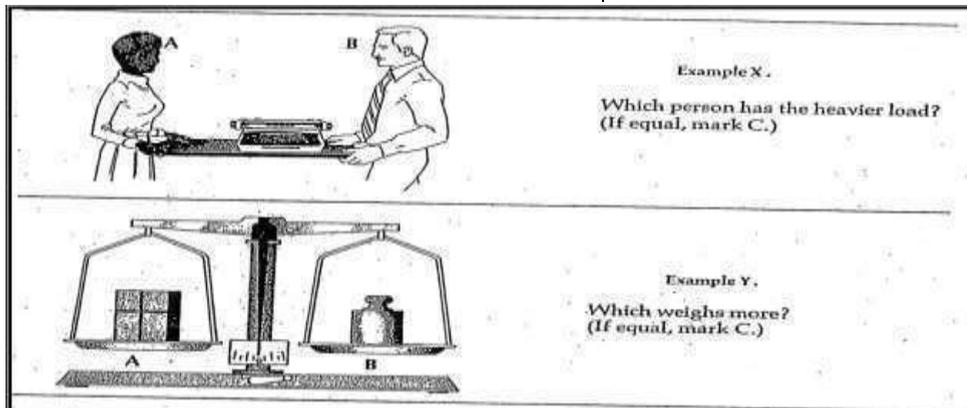
Source: Jack (2001)

In Example Y, study the position of the black dot in the Problem Figures. Note that it keeps moving around the square clockwise: upper left corner, upper right corner, lower right corner, lower left corner. In what position will it be seen in

next? It will come back to the upper left corner.

Therefore, B is the correct answer. **Mechanical Reasoning**

This test consists of a number of pictures and questions about those pictures. Look at the two examples below, to see just what to do.



Source: Jack (2001)

Example X shows a picture of two people carrying a typewriter on a board and asks, Which person has the heavier load? (If equal, mark C.) Person B has the heavier load because the weight is closer to him than to person A. . Example Y asks, Which weighs more? (If equal, mark C.) As the scale is perfectly balanced, A and B must weigh the same, so the correct answer is C. Do not forget that there is a third choice for every question. You will have 30 minutes for this test. Work as rapidly and as accurately as you can. If you are not sure of an answer, mark the choice that is your best guess.

This test consists of forty numerical problems. Next to each problem there are five answers. You are to pick out the correct answer and mark its letter on the Answer Sheet. If you do not find a correct answer among the first four choices. Choice N for every problem is none of these, which means that a correct answer is not among the first four choices. Only one answer should be marked for each problem. Do your figuring on the scratch paper you have been given, and reduce fractions to lowest terms. Here are some examples.

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Awareness, Adoption and Utilization of Artificial Intelligence among Nursing Students of Bayero University, Kano, Nigeria

By

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Abstract

This study aims to assess the knowledge, adoption, and utilization of AI among nursing students at Bayero University, Kano, Nigeria. A descriptive cross-sectional survey design was employed. Data were collected from 222 nursing students enrolled in various academic levels at Bayero University. Data were gathered through a structured questionnaire and analyzed using SPSS version 25. The findings revealed that 55.4% of students had moderate knowledge of AI, 45% were willing to adopt AI and utilization of AI was high (82.9%), with 37.6% using it rarely and 28.4% using it daily. Barriers included technical issues (53.2%) and lack of training (46.8%). Inferential statistics showed no significant relationship between knowledge of AI and socio-demographic factors such as age, gender, and education level ($p > 0.05$). However, tribal background significantly influenced AI knowledge ($p = 0.009$). Additionally, gender significantly influenced AI adoption ($p = 0.001$). Students at Bayero University Kano are generally aware of AI but face gaps in knowledge, practical skills, and confidence, with many undecideds about adoption. Integrating targeted curriculum modules and regular workshops could address barriers and explore cultural and regional influences on AI adoption.

Keywords: Artificial Intelligence, Nursing Education, AI Adoption, Utilization, Healthcare Technology

Introduction

Artificial intelligence (AI) is transforming healthcare globally by improving service delivery, enhancing patient outcomes, and optimizing operational efficiency (Mahomed, 2018). AI refers to computer systems capable of simulating human cognitive functions such as learning, problem solving, and decision making (Ladan, 2022). In healthcare, technologies like machine learning and natural language processing are increasingly used for disease diagnosis, outcome prediction, and management of complex clinical data, creating new opportunities for high quality and efficient care (Wood et al., 2021). In nursing education, AI offers significant potential to personalize learning, automate administrative processes, and support clinical skills development. Tools such as AI powered simulations, adaptive

learning platforms, and intelligent tutoring systems can tailor educational content to individual needs, provide real time feedback, and create immersive training experiences (Blease et al., 2019; Huisman et al., 2021). Globally, these innovations are reshaping how nursing students acquire competencies and prepare for evolving healthcare demands. However, studies in West Africa show that AI adoption in nursing education is limited, often due to low awareness, skills gaps, and inadequate institutional support (Djokic et al., 2024; Guanah & Oribhabor, 2023).

In Nigeria, AI integration in healthcare and nursing education remains at an early stage (Ladan, 2022; Oluwadiya et al., 2023). While some tools incorporating AI, such as decision support systems and mobile health applications, are in use, their potential is not widely recognized or effectively

utilized by nursing students (Huisman et al., 2021). Contributing factors include minimal AI content in nursing curricula, limited access to relevant technologies, and insufficient faculty training. These gaps may hinder the ability of Nigerian nursing graduates to meet the global shift toward technology driven healthcare. At Bayero University, Kano, there is no available baseline data on nursing students' awareness, adoption, and utilization of AI in their education or anticipated professional practice. Establishing this evidence is essential for designing targeted interventions that will equip students with relevant competencies and prepare them for the demands of modern nursing practice. This study therefore aims to assess the knowledge, adoption, and utilization of artificial intelligence among nursing students at Bayero University, Kano. The findings will provide evidence to inform curriculum review, institutional policy, and regional strategies for enhancing AI readiness in nursing education within Nigeria and across West Africa education and practice in Nigeria and beyond.

Methodology

This study employed a descriptive cross-sectional survey design to assess the knowledge, adoption, and utilization of artificial intelligence (AI) among nursing students at Bayero University, Kano (BUK). The Department of Nursing, established in 2009, currently enrolls approximately 469 students across undergraduate and postgraduate programs. All registered nursing students during the study period were invited to participate, using a census approach. Of the 469 eligible students, 222 completed and returned

the questionnaire, yielding a response rate of 47.3 percent. Non-response was primarily due to absenteeism during data collection periods and scheduling conflicts with clinical placements.

The data collection instrument was a structured questionnaire developed by the researcher after reviewing relevant literature on AI in nursing education, with emphasis on studies from West Africa. Items were designed to capture four domains: socio-demographics, knowledge, adoption, and utilization of AI. Knowledge and utilization items were measured on a five-point Likert scale (strongly agree to strongly disagree), while acceptance items used a four-point scale (strongly agree to strongly disagree) to avoid a neutral midpoint. The draft instrument underwent face and content validation by five senior nursing lecturers, and the content validity index (CVI) for the overall instrument was 0.92, indicating high agreement on item relevance.

A pilot test involving 40 nursing students (approximately 10 percent of the target population) was conducted to assess clarity and reliability. The overall Cronbach's alpha coefficient was 0.701, which is acceptable for exploratory studies. Domain-specific reliability was 0.74 for knowledge, 0.69 for adoption, and 0.72 for utilization. The pilot also established that an average of 23 minutes was sufficient to complete the questionnaire. Data collection was carried out after obtaining ethical approval from the Research and Ethics Committee of the College of Health Sciences, Bayero University, Kano. Informed consent was obtained from all participants, and confidentiality was assured by omitting personal identifiers. The researcher explained the study objectives before distributing the questionnaire, which was self-administered during scheduled lecture or tutorial sessions.

Data collection was carried out after obtaining ethical approval from the Research and Ethics Committee of the College of Health Sciences, Bayero University, Kano. Informed consent was obtained from all participants, and confidentiality was assured by omitting personal identifiers. The researcher explained the study objectives before distributing the questionnaire, which was self-administered during scheduled lecture or tutorial sessions.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics, including frequencies, percentages, means, and standard deviations, summarized socio-demographic variables and responses to the AI-related items. Inferential statistics included chi-square, independent t-test and Mann Whitney test to examine the relationship between knowledge, adoption, and utilization of AI.

Results

Table 1: Socio-demographic Characteristics (N=222)

Variable	Category	Frequency	Percentage (%)
Age	Mean ± SD	25.65±6.116	
Marital Status	Single	177	79.7
	Married	45	20.3
Gender	Female	141	63.5
	Male	81	36.5
Level of Education	100Level	7	3.2
	200 Level	13	5.9
	300 Level	106	47.7
	400level	36	16.2
	500 Level	28	12.6
	Post Graduate Diploma	6	2.7
	M.Sc.	24	10.8
Religion	PhD	2	0.9
	Islam	171	77.0
Tribe	Christianity	51	23.0
	Hausa	117	52.7
	Yoruba	39	17.6
	Igbo	16	7.2
	Fulani	3	1.4
	Ebira	14	6.3
	Others	33	14.9
Total		222	100

The socio-demographic characteristics of the sample (N=222) show that the average age is 25.65 years. Most participants are single (79.7%) and female (63.5%). Most respondents practice Islam (77%) and are of Hausa decent (52.7%).

Other notable tribes include Yoruba (17.6%) and Igbo (7.2%). Education levels range from 100- level to PhD, with the majority being undergraduates (Table 1).

Figure 1: Knowledge of Artificial Intelligence

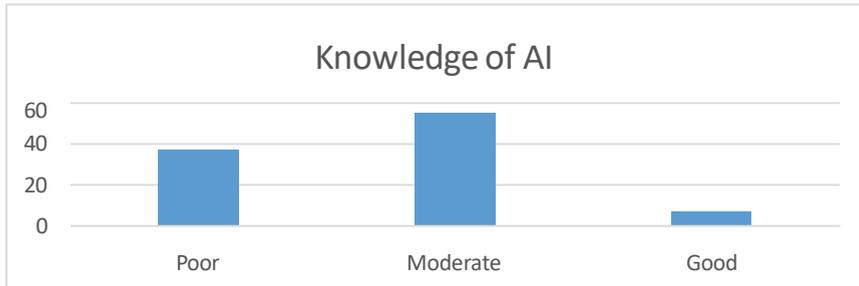
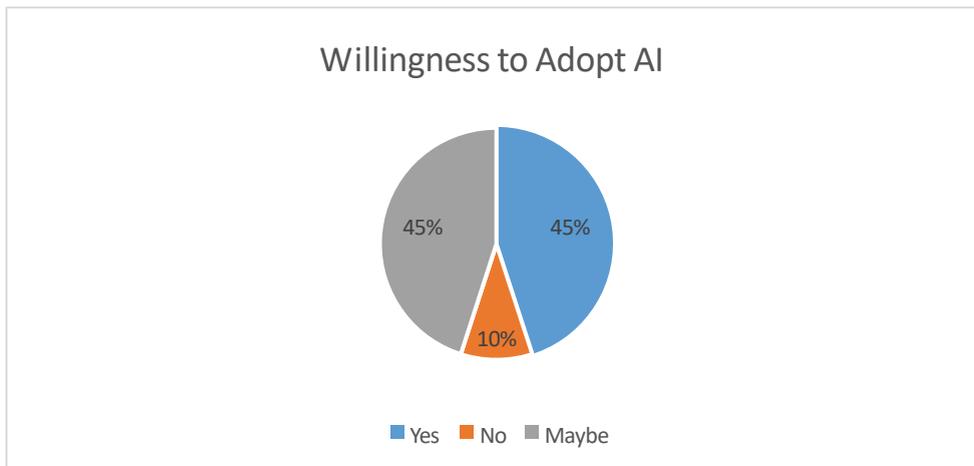


Figure 1 shows the distribution of knowledge levels among participants. About half (55.4%), had moderate

Figure 2: Adoption of Artificial Intelligence



The willingness to adopt AI is fairly divided. Almost half of the respondents (45%) are willing to adopt AI, while 9.9%

are opposed to it. The remaining 45% are uncertain, selecting "Maybe." (Figure 2).

Figure 3: Utilization of Artificial Intelligence

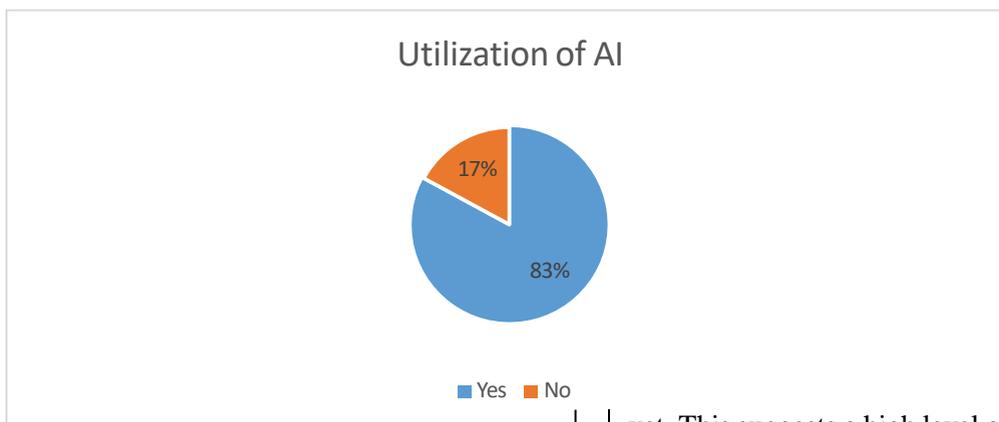
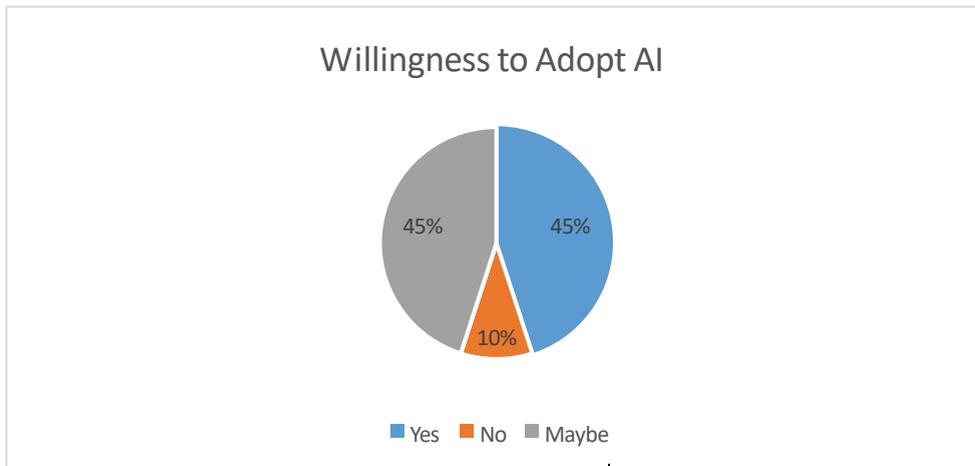


Figure 3 revealed that most respondents (83%) have used AI, indicating a strong utilization rate, while 17% have not used it

yet. This suggests a high level of engagement with AI technologies (Figure 3). knowledge of AI, while 37.4% had "Poor." Only 7.2% had good knowledge of AI.

Figure 2: Adoption of Artificial Intelligence



The willingness to adopt AI is fairly divided. Almost half of the respondents (45%) are willing to adopt AI, while 9.9%

are opposed to it. The remaining 45% are uncertain, selecting "Maybe." (Figure 2).

Figure 3: Utilization of Artificial Intelligence

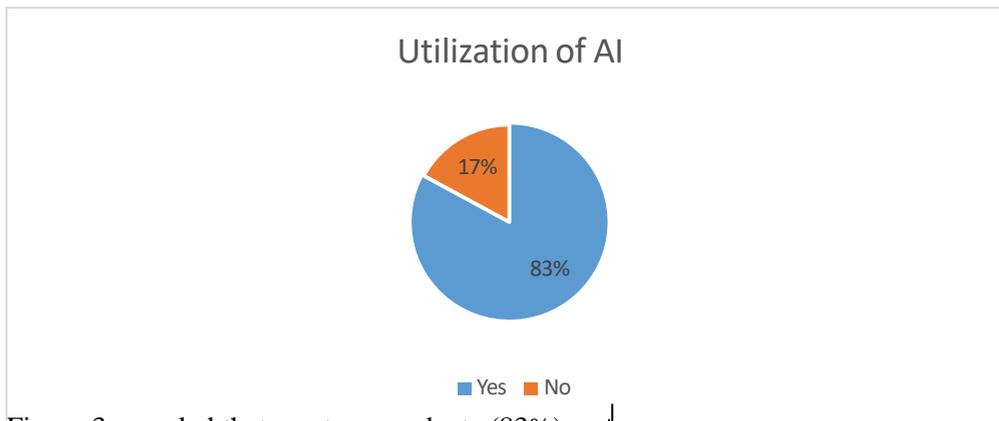


Figure 3 revealed that most respondents (83%) have used AI, indicating a strong utilization rate, while 17% have not used it

yet. This suggests a high level of engagement with AI technologies (Figure 3)

Figure 4: Frequency of Utilization of Artificial Intelligence

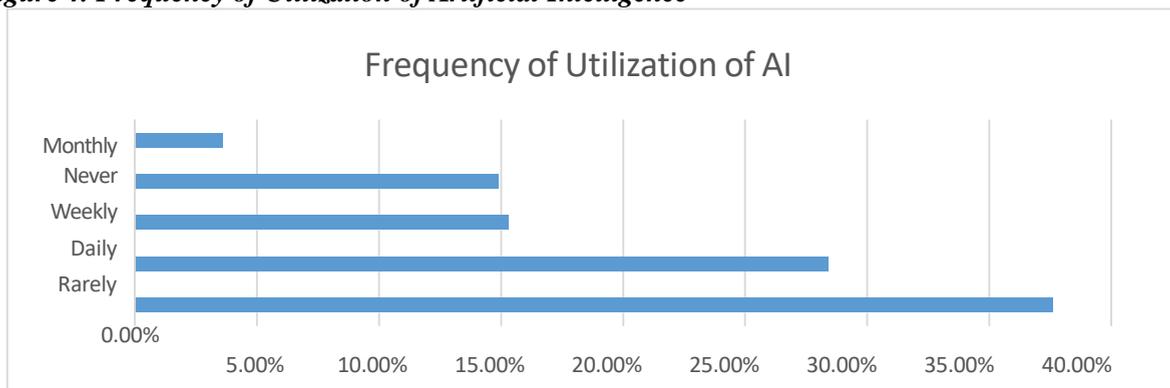
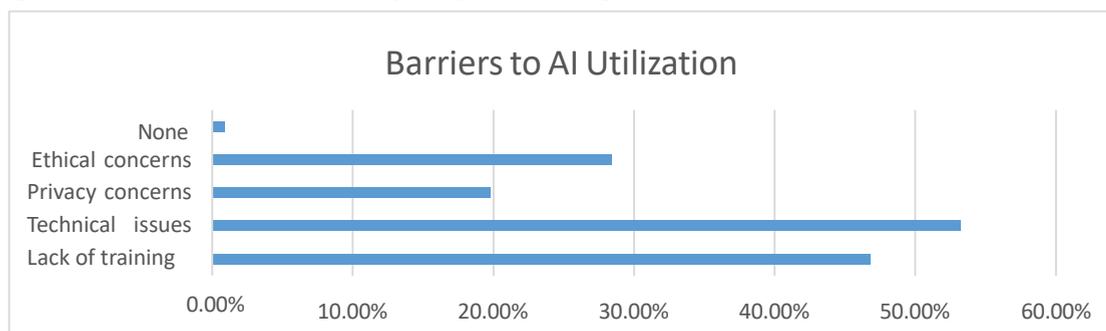


Figure 4 shows that most respondents use AI rarely (37.6%) or daily (28.4%), with

fewer using it weekly (15.3%), monthly (3.6%), or never (14.9%).

Figure 5: Barriers to Utilization of Artificial Intelligence



The main barriers to AI utilization are technical issues (53.2%) and lack of training (46.8%), with smaller concerns

about privacy (19.8%) and ethics (28.4%), while 0.9% report no barriers (Figure 5).

Table 2: Perception of Artificial Intelligence

Category	Frequency	Percentage (%)
Comfortability of Using AI in Health Care Practice and Education		
Very uncomfortable	19	8.56
Somewhat uncomfortable	26	11.71
Neutral	66	29.73
Somewhat comfortable	54	24.32
Very comfortable	41	18.47
Concern About AI Replacing Health Care Professionals		
Very concerned	26	33.3
Concerned	22	28.2
Neutral	15	19.2
Somewhat unconcerned	8	10.3
Unconcerned	9	11.5
Belief That AI Can Improve Overall Patient Care		
Strongly disagree	4	5.1
Disagree	14	17.9
Neutral	19	24.4
Agree	29	37.2
Strongly agree	13	16.7

Table 2 presents varying perception on AI in healthcare. Regarding comfortability, most respondents feel neutral (29.73%) or somewhat comfortable (24.32%) using AI in healthcare practice and education, with fewer expressing discomfort (8.56% very uncomfortable). In terms of concern about AI replacing healthcare professionals, a **Inferential Statistics**

significant portion is concerned (33.3% very concerned and 28.2% concerned), while some remain unconcerned (11.5%). Regarding AI's potential to improve patient care, the majority agrees (37.2%) or remains neutral (24.4%), with only a small percentage strongly disagreeing (5.1%).

Table 3: Chi-square test for association between Knowledge and Socio-demographic Factors

Variable	Pearson Correlation	Sig. (2-tailed)	N
Age	1.000	-	222
Knowledge of AI	0.007	0.912	222

Variable Pair	Pearson Chi-Square Value	df	Asymptotic Significance (2-sided)
Gender x Knowledge of AI	3.747	2	0.154
Marital Status x Knowledge of AI	0.268	2	0.875
Level of Education x Knowledge of AI	11.713	14	0.629
Religion x Knowledge of AI	4.215	2	0.122
Tribe x Knowledge of AI	23.456	10	0.009

The chi-square test showed no significant association between most socio-demographic factors (age, gender, marital status, religion, education level) and AI knowledge among students.

However, tribe was significantly related to AI knowledge ($\chi^2 = 23.456, p = 0.009$), with Igbo students having the highest proportion of good AI knowledge (31.25%). The null hypothesis was rejected for tribe but retained for other variables.

Table 4: Independent T- Test depicting relationship between age and Adoption of AI

		Levene's Test for Equality of Variances		Independent Samples Test						
		F	Sig.	t-test for Equality of Means					95% Confidence Interval of the Difference	
				t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
AGE	Equal variances assumed	.094	.760	-.911	220	.363	-.752	.825	-2.378	.875
	Equal variances not assumed			-.899	198.283	.370	-.752	.836	-2.401	.897

The t-test results for age revealed that there was no significant difference in AI adoption between age groups, as indicated by a p- value of 0.363, which is greater than the threshold of 0.05. Therefore, we fail to reject the null hypothesis concerning age,

suggesting that age does not significantly affect students' willingness to adopt AI. Additionally, the Levene's Test for equality of variances confirmed that the assumption of equal variances was met ($p = 0.760$) (Table 4).

Table 5: Chi-square test for association between Adoption and Socio-demographic Factors

Variables Pair	Pearson Square Value	Chi- Df	Asymptotic (2-sided)	Significance
Gender x Willingness to Adopt AI	14.38	2	0.001	
Marital Status x Willingness to Adopt AI	1.514	2	0.469	
Religion x Willingness to Adopt AI	6.741	2	0.034	
Tribe x Willingness to Adopt AI	8.221	10	0.607	
Level of Education x Willingness to Adopt AI	8.816	14	0.843	

For the chi-square tests, several socio-demographic factors were examined. Gender and willingness to adopt AI analysis showed a significant relationship ($p = 0.001$). Similarly,

religion was found to have a significant impact on AI adoption ($p = 0.034$). In contrast, marital status ($p = 0.469$) and tribe ($p = 0.607$) showed no significant relationship with AI adoption, as their p-values were greater than 0.05 (Table 5).

Table 6: Independent T- Test depicting relationship between age and Adoption of AI

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
AGE	Equal variances assumed	.066	.798	1.337	220	.182	1.455	1.088	-.689	3.599
	Equal variances not assumed			1.405	56.232	.165	1.455	1.035	-.619	3.529

The t-test for age revealed no significant difference in AI utilization across age groups, with a p-value of 0.182, which is greater than the 0.05 threshold for significance. This suggests that age does

not significantly affect the likelihood of students utilizing AI. Additionally, the Levene's test indicated that the assumption of equal variances between age groups was not violated (p = 0.798) (Table 6).

Table 7: Chi-square test for association between Knowledge and Socio-demographic Factors

Variable Pair	Pearson Value	Chi-Square	df	Asymptotic Significance (2- sided)
Gender x Utilization of AI	0.177	1	0.674	
Marital Status x Utilization AI	0.570	1	0.450	
Religion x Utilization of AI	0.096	1	0.757	
Tribe x Utilization of AI	1.563	5	0.906	

Variable Pair	Pearson	Chi-Square	df	Asymptotic Significance (2-Value sided)
Level of Education x Utilization of AI	10.188	7	0.178	

The chi-square tests indicated that socio-demographic factors such as gender, marital status, religion, tribe, and level of education did not show significant relationships with the utilization of AI. The p-values for gender (0.674), marital status

(0.450), religion (0.757), tribe (0.906), and level of education (0.178) were all greater than 0.05, suggesting that these factors do not significantly influence students' utilization of AI (Table 7).

Table 8: Mann-Whitney Test for relationship between Knowledge and Adoption of AI

Ranks				
	Willingness to adopt AI	N	Mean Rank	Sum of Ranks
Knowledge of AI	Yes	100	118.48	11847.50
	No	122	105.78	12905.50
	Total	222		
Test Statistics^a				
			Knowledge of AI	
Mann-Whitney U			5402.500	
Wilcoxon W			12905.500	
Z			-1.489	
Asymp. Sig. (2-tailed)			.136	
a. Grouping Variable: Willingness to adopt AI				

The Mann-Whitney U test showed that students willing to adopt AI had a slightly higher mean rank in AI knowledge (118.48) than those unwilling (105.78), but the

difference was not statistically significant (U = 5402.500, =0.136). Thus, willingness to adopt AI is not significantly related to AI knowledge.

Table 9: Mann-Whitney Test for relationship between Knowledge and Utilization of AI

Ranks				
	Utilization of AI	N	Mean Rank	Sum of Ranks
Knowledge of AI	Yes	184	113.84	20946.50
	No	38	100.17	3806.50
	Total	222		
Test Statistics^a				
			Knowledge of AI	
Mann-Whitney U			3065.500	
Wilcoxon W			3806.500	
Z			-1.214	
Asymp. Sig. (2-tailed)			.225	
a. Grouping Variable: Utilization of AI				

The Mann-Whitney U test showed that AI users had a slightly higher mean rank in AI knowledge (113.84) than non-users (100.17), but the difference was not statistically significant (U = 3065.500, p = 0.225). Thus, AI utilization is not significantly related to AI knowledge.

Discussion of Findings

This study examined the knowledge, adoption, and utilization of Artificial Intelligence (AI)

among students at the College of Health Sciences, Bayero University Kano, providing insights into factors influencing their engagement with AI technologies. Findings indicate that most students possessed moderate knowledge of AI, while a notable proportion reported poor knowledge. This aligns with Mesko (2020), who noted that although awareness of AI is increasing in healthcare, in depth understanding, particularly of concepts like

machine learning and neural networks, remains limited. The Mann Whitney U tests in this study revealed no statistically significant difference in AI knowledge between those willing and unwilling to adopt AI, or between users and nonusers. This suggests that willingness and actual utilization are influenced by factors beyond knowledge alone, potentially including perceived usefulness and social influence as outlined in the Technology Acceptance Model (TAM) (Davis, 1989). About half of the students expressed willingness to adopt AI, while many remained uncertain. Gender emerged as a significant factor, with more females than males expressing willingness. This could reflect differences in perceived ease of use or confidence in AI related skills, as TAM posits. Religion also influenced adoption, hinting at underlying cultural or ethical considerations in technology acceptance. In contrast, marital status and tribe were not significant predictors. Comparable studies in the African context, such as Adewale et al. (2021), have reported that sociocultural factors can play a nuanced role in shaping technology adoption patterns. While majority of students had used AI at least once, daily usage was relatively low (28.4 percent), with many using it rarely. This pattern reflects barriers such as limited formal AI training, inadequate access to tools, and insufficient integration into the curriculum, issues similarly reported in other developing country contexts (Buabbas et al., 2023; Adewale et al., 2021). Notably, students with access to AI driven platforms in anatomy and radiology reported better comprehension of complex topics, echoing findings by Arntfield et al. (2020) on the educational benefits of AI enhanced learning.

Limitations

This study is subject to certain limitations. Data were self-reported, which may introduce response bias. The cross-sectional design limits causal inference, and the study was confined to a single institution, reducing generalizability. Additionally, the absence of qualitative data limits the depth of understanding regarding students' motivations and concerns.

Conclusion

This study found that students at Bayero University Kano are generally aware of AI, yet significant gaps remain in detailed knowledge and practical application. Willingness to adopt AI is mixed, with a large proportion undecided, suggesting hesitation rather than unequivocally high adoption. Utilization is limited by lack of formal training, infrastructure, and clarity on ethical implications. Addressing these challenges could involve integrating a one-credit AI module into the third-year nursing curriculum by 2026 and hosting quarterly AI workshops to build hands-on skills. Future research should use mixed-methods or multicenter designs to track changes in AI knowledge and adoption over time, and to explore how cultural and regional factors influence technology acceptance.

Funding

No Funding

Conflict of Interest

There is no conflict of interest in this project.

Human Ethics and Consent to Participate Declarations:

The study was conducted in accordance with ethical standards, and informed consent was obtained from all participants.

Availability of Data and Material

The datasets generated and/or analyzed during the current study are available from the corresponding author on request.

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Bayero Journal of Education in Africa Volume II No 3 2025
Assessing the Facilities and Scope of Knowledge Dissemination on the Causes of Maternal Health Complications among Women of Childbearing Age in Kano State, Nigeria

By

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Abstract

This study evaluates the availability of facilities and the extent of knowledge dissemination regarding maternal health complications among women of reproductive age in Kano State. The primary objectives were to determine the scope of knowledge of the causes of maternal health complications among women of childbearing age, to examine the methods for the dissemination of knowledge about maternal health among women of childbearing age and to determine the facilities for dissemination of the knowledge about the prevention of maternal health among the women of childbearing age in Kano State, Nigeria. Three research questions guided the study, which adopted a descriptive survey design. The target population included 1,085,170 women of childbearing age along with antenatal healthcare providers in Kano State. Using purposive sampling, a total of 384 participants were selected. Data collection was conducted through the administration of a validated questionnaire titled "Questionnaire on Dissemination of Knowledge on Maternal Health Services (QDKMHS)," with face and content validity confirmed. The study revealed that women's understanding of maternal health services was significantly shaped by cultural beliefs. Barriers to effective knowledge dissemination included inadequate community sensitization by health workers, poor road infrastructure hindering access to care, and insufficient medical equipment. The study recommended that the Kano State Government, in collaboration with relevant ministries such as Information, Health, and Women Affairs as well as religious and extension service institutions initiate community mobilization efforts. These should include educational outreach via film screenings, radio, and television programs. In a further assessment, the study identified that limited awareness among women included issues such as mismanagement during labor, poor hygiene, severe abdominal pain, anemia, headaches, and maternal infections.

Keywords: Facilities, Dissemination, Knowledge, Maternal Health, Women of Childbearing Age

Introduction

One of the major challenges of the 21st century is reducing the approximately 3 million newborn and 300,000 maternal deaths that occur globally each year. This health burden is not uniformly distributed, most deaths occur in the poorer regions of the world. It is widely believed that many of these deaths could be prevented with better access to skilled care. There is a concerted global effort to increase the use of antenatal and delivery services by expecting mothers. Many of these efforts have sought to make healthcare use more

affordable. (World Health Organization, 2015). The World Bank and the United Nation Population Division in their 2014 report, Trends in Maternal Mortality: 1990 to 2013, stated that Africa accounts for the highest burden of global maternal deaths. In 2013, approximately 289,000 women worldwide died during pregnancy or childbirth, and of those deaths 62% occurred in sub-Saharan Africa. The report added that in 2013, the MMR in developing countries was 230 women per 100,000 births, versus 16 women per

100,000 in developed countries (WHO, 2014). As sub-Saharan countries strive for universal health coverage, future health policies and interventions must be strengthened to increase the use of maternal care services and being more able to address the disparities in the utilization of maternal care, especially for those who are poor and live in rural areas in sub-Saharan African countries (Alam, 2015). The high rate of maternal health complications is a major public health concern in Nigeria. Several studies have shown that pregnant women in rural areas are at a greater risk of dying during pregnancy or child birth as compared to those that live in urban areas. This is largely due to limited access of maternal healthcare among rural women, as health facilities are often located far from where they live, resulting to their reliance more on use of traditional source of care. This poor access to maternal health facilities leads to pregnancy complications and may even be the major cause of maternal deaths this study seek to assess the facilities and scope of knowledge dissemination on the causes of maternal health complication among women of childbearing age in Kano State, Nigeria

Research Questions

The study answered the following questions:

- i. What are the facilities for the dissemination of knowledge about the prevention of maternal health services among women of childbearing age in Kano State?
- ii. What is the scope of knowledge of the causes of maternal health complications among women of childbearing age in Kano State?
- iii. What are the methods for the dissemination of knowledge about maternal health among women of childbearing age in Kano State

The Concept of Knowledge

Sallis and Jones (2002) defined knowledge as information in use, and the interaction of information with the human mind, which gives it meaning and purpose. Knowledge is constructed through an “accumulation of facts, procedural rules or heuristics through our daily experience and study”. It also involves the intelligence to acquire and apply what one has understood through learning and experience. Knowledge is derived from information but is richer and more meaningful than information.

Knowledge is a highly organized intellectual product of humans that includes personal experience, skills, understanding the different contexts in which we operate our activities and assimilation of all these and recording all this in a form that could be communicated to others. This communication of recorded experience, data, information, etc. makes for further of growth (Davenport, 2010).

The Concept of Dissemination

Dissemination means conveying or delivering the message to each audience at a variety of different places. This is the actual implementation of your health education activities. However, you should keep in mind that health education is more than the simple dissemination of health education messages. Making an audience aware of new and relevant information is termed “dissemination,” which literally means “to scatter, or sow”. However, when the term is applied to achieving an effective flow of information between a source and audience, it is important that the process is not haphazard, like scattering seeds. The event should be more carefully planned and targeted towards and tailored to the needs of its intended audience (Lomas, 2011).

In order to bring about behavioral change, the dissemination of your message should be accompanied by other supportive activities, which facilitate the behavior change process. For example, you need to clarify misunderstandings, elaborate the content of the message with examples and identify barriers that may prevent people from performing beneficial behaviors. This may also involve providing the resources needed to perform the health-related behavior, such as providing condoms or other contraceptive methods if your message is about contraception. It may also be necessary to address any cultural factors, which discourage the desired behavior (Wagner, 2010).

Dissemination also can be regarded as the targeted distribution of information and intervention materials to a specific public health or clinical practice audience. The intent is to spread knowledge and the associated evidence-based interventions. Dissemination occurs through a variety of channels, social contexts and settings.

Maternal Education

Education has a strong influence on the status of an individual in the society. Jamison (2006) stated that lower societal and household status associated with lack of education is correlated to higher gender violence, lower legal protection and in turn high rates of maternal. Highly educated women have good jobs and better access to quality maternal care (Joseph, 2003). Due to increase in women accessing education, the number of early marriages has dropped drastically. This together with improved women access to resources and female autonomy has also had a positive influence in reducing the number of mortalities due to child birth. Education also enables women to better

understand the risks associated with over working during pregnancy and the importance of taking a break prior to the delivery date. Due to education, women spend a substantial number of years in school. This makes them less likely to get married at a younger age. By marrying post their ten years, these women experience reduced chances of maternal mortalities associated with early motherhood. Moreover, educated mothers are better placed to take complications and risks seriously and together with their household embrace emergency services when the services are called for and not to take the services for granted. Educated women are less likely to accept dangerous and cultural deeds during and after pregnancy. Some of the beliefs especially in the African continent prohibit expectant mothers from accessing health care from skilled birth attendants. Hence, cultural beliefs stand as a high contributory factor to maternal mortality (Lori 2009).

Maternal Health Care

Maternal Health Care is the overall wellbeing of women at the stage of pregnancy and children below age 5. It is comprehensive, as it includes educational, social, nutritional services as well as medical care during and post-pregnancy. As has been observed, some reasons have been attributed to why many pregnant and nursing mothers chose not to make use of appropriate antenatal and postnatal cares. Some of these reasons can be cultural and hereditarily related to the social, economic and political developments. This implies that both the natural environment-biological-and the social environment perform powerful and critical functions in the healthcare utilization behavior of women across most African societies. (WHO, 2010). According to Akokuwebe

and Okafor (2016), pregnancy-related death is the main most critical health problem that medical practitioners and Nigerians are faced with. Many of the Nigerian populace, especially women who are of the low socioeconomic background, is constantly at the verge of being a victim of maternal mortality. This condition makes them prone to sickness, infirmity and in most cases result in death due to their inability, to access good health services, especially reproductive health services. It is important for women in their reproductive age to have unhindered access to quality reproductive health services and be empowered to make decisions on issues of family planning. Having unhindered access to comprehensive reproductive health-care will increase women's chances of survival during pregnancy, give them the opportunity of having healthy children and enable them to have a balanced family and work life.

Maternal health-care delivery in Nigeria faces many challenges. These include the lack of the acceptability, accessibility and affordability of existing services as well as poor quality control and poor regulation of services. Maternal health care is grossly underfunded. Less than 7% of Nigeria's annual budget has gone to the health sector since the 1990s. Culture, poverty and illiteracy are also other issues of concern. In terms of

accessibility, many women, especially in rural areas, still travel long distances to reach a formal health care facility. One recent national study showed that approximately two in five women in Nigeria lack transportation to facilities during labor.

Methodology

This study uses a descriptive survey research design, which can involve collecting numerical data or categorizing information. The goal is to gather data, organize it, and describe the findings. This approach provides a snapshot of events, identifies patterns, and informs decision-making. The design was appropriate for this study because it gives current information on the knowledge dissemination on maternal mortality among women of childbearing age in Kano State, which adopted a descriptive survey design. The target population included 1,085,170 women of childbearing age along with antenatal healthcare providers. Using purposive sampling, a total of 384 participants were selected

Research Question 1: What is the scope of knowledge about the causes of maternal health among women of childbearing age in the , Kano state?

This research question was answered using frequency and mean scores ranked and presented on the following table:

Item	Frequency/Percentage				Mean	Decision
	SA	A	D	SD		
Maternal infection during pregnancy and postpartum period contributes to maternal death.	153 (48.6)	152 (48.3)	7 (2.2)	3 (1.0)	3.44	Accepted
Severe headache during pregnancy leads to pregnancy complications and maternal death	151 (47.9)	158 (50.2)	5 (1.6)	3 (0.3)	3.46	Accepted
Loss of fetal movement results in labour complications and maternal death.	141 (44.8)	173 (54.9)	1 (0.3)	0	3.44	Accepted
Severe/unusual abdominal pain may lead to maternal death.	153 (48.6)	157 (49.8)	4 (1.3)	1 (0.3)	3.47	Accepted
Mismanagement of labor at the maternal health clinic may lead to maternal mortality.	159 (50.5)	152 (48.3)	3 (1.0)	3 (0.3)	3.49	Accepted
Anemia during pregnancy may lead to maternal death.	156 (49.5)	151 (47.9)	5 (1.6)	3 (1.0)	3.46	Accepted
Delayed permission from husband to attend antenatal clinic may lead to maternal mortality.	152 (48.3)	157 (49.8)	6 (1.9)	0	3.46	Accepted

The table shows that the highest frequency of the respondents on knowledge of the causes of maternal health complications was 173 with a percentage of (54.9) this shows that more than half of the respondents agreed on the factors such as mismanagement of labor at the maternity, clinic, and poor hygiene may lead to pregnancy complications and even maternal mortality, Kano state. Mismanagement of labour at the maternal health clinic may lead to maternal health. It has the highest mean score 3.49. This indicates that all the respondents strongly agreed that the mismanagement of labour at maternal clinic may lead to maternal death. It

was followed by poor hygiene with a mean score of 3.48. Severe/unusual abdominal pain may lead to pregnancy complication with a mean score of 3.47. It was followed by severe headache, anemia and delayed permission from husband to attend antenatal clinic may lead to maternal mortality with a mean score of 3.46, respectively

“Research Question 2: What are the facilities for knowledge dissemination about prevention of maternal health among women of childbearing age in the south senatorial district Kano?

Table 2: Facilities for knowledge dissemination. N = 315

Item	Frequency/ Percentage				Mean	Decision
	SA	A	D	SD		
Tricycles are used as mobile referral support services in maternal health clinics	40 (12.7)	62 (19.7)	126 (40.0)	87 (27.6)	2.17	Rejected
Blood pressure monitor(apparatus) is used as a facility for maternal health	120 (38.1)	149 (47.3)	26 (8.3)	20 (6.3)	3.17	Accepted
Television and radio instruction aid are used for knowledge dissemination in maternal health clinics	121 (38.4)	159 (50.5)	26 (8.3)	9	3.24	Accepted
Posters, diagrams and charts are used by health care providers during antenatal care for knowledge dissemination	135 (42.9)	145 (46.0)	22 (7.0)	13	3.28	Accepted
Fetoscope is used for monitoring fetal palpation during antenatal care visits and is an important facility for knowledge dissemination	116 (36.8)	156 (49.5)	28 (8.9)		3.18	Accepted
Delivery kits such as needle holder, episiotomy scissors and cord clamp are used for delivery and are important facilities for knowledge dissemination	12 (3.8)	39 (12.4)	133 (42.2)	131 (41.6)	3.38	Accepted
Halls and theatres for knowledge dissemination are sufficient in maternal health care	6 (1.9)	24 (7.6)	122 (38.7)	163 (51.7)	1.60	Rejected
Anti-shock garment belt is used in postpartum period to stop hemorrhage and it is important facility for knowledge dissemination	80 (25.4)	106 (33.7)	68 (21.6)	61 (19.4)	2.65	Accepted
Sterilizers are important facilities equipment for knowledge dissemination	78 (24.8)	109 (34.6)	72 (22.9)	56 (17.8)	2.66	Accepted

The table above shows that 163 is the highest frequency with percentage of 51.7 followed by 149 respondents with 47.3% and the lowest frequency was 3 with (1.0%) showing the strongly disagreed that the glucometer is used as equipment for knowledge dissemination in the study area. This shows the mean rank of respondents on facilities for knowledge dissemination about prevention of maternal health among women of childbearing age in Kano state.. “Television and video instructional aid are used for knowledge dissemination with a mean score of 3.24. It is followed by “fetoscope is used for monitoring fetal palpation during antenatal care visits with a mean score of 3.18. “Blood pressure monitor (apparatus) is used as a facility for

knowledge dissemination with a mean score of 3.17. It is followed by ‘Sterilizers are important facilities/ equipment for knowledge dissemination with a mean score of 2.66. Also, “anti-shock garment belt is used in postpartum period to stop hemorrhage age with a mean score of 2.65. Lastly, “Halls and theatres for knowledge dissemination are sufficient in maternal health clinic in Kano State” has the lowest mean score of 1.60. This implies that the respondents strongly disagreed that the halls and theatres are sufficient in the maternal mortality health clinics.

Question 3

What are the methods for dissemination of knowledge about maternal health complications among women of childbearing age in Kano State

Item	Frequency/Percentage				Mean	Rank
	SA	A	D	SD		
Role play is a method for knowledge dissemination during antenatal clinic visits	158 (50.2)	154 (48.9)	2 (0.6)	1 (0.3)	3.49	2 nd
Jingles for maternal enlightenment are shared in radio programmes	170 (54.0)	142 (45.1)	3 (1.0)	-	3.53	1 st
Women of childbearing age receive information about pregnancy danger signs through television programs	41 (13.0)	71 (22.5)	113 (35.9)	90 (28.6)	2.20	9 th
Educative maternal songs are shared during antenatal visits among women of childbearing age	140 (44.4)	149 (47.3)	21 (6.7)	5 (1.6)	3.35	3 rd
Village community mobilizers (VCMs) can disseminate information about risk factors of maternal mortality among women of childbearing age	133 (41.3)	163 (51.7)	14 (4.4)	5 (1.6)	3.35	3 rd

Discussion of Findings

The result of analysis on the facilities for knowledge dissemination discussed above was supported at focus group discussions made with antenatal service providers stating that halls and theatres for knowledge dissemination were not sufficient in primary health care centers in Kano State. Also, they stated that radio and television instructional aids, delivery kits, posters, diagrams and charts were used by midwives and community health extension workers as facilities for knowledge dissemination to women of childbearing age in Kano State, Kano. This is associated with the discussions made with antenatal service provider from FGD mentioning that: “the facilities used for knowledge dissemination include delivery kits, posters, diagram and charts are used by antenatal care provider during antenatal clinic for knowledge dissemination”.

Summary of Findings

Based on the analysis of the data, the following findings were deduced:

- i. Facilities for knowledge dissemination on maternal health are delivery kits such as needle holder, episiotomy scissors and cord clamp are used for delivery and are important facilities for knowledge dissemination, Posters, diagrams and charts are used by health care providers during antenatal care for knowledge dissemination

and Television and radio instruction aid are used for knowledge dissemination in maternal health clinics

- ii. The scope of knowledge about maternal health complications among women of childbearing age in the south senatorial district, Kano state were mismanagement of labour at the maternal health clinic may lead to maternal mortality, poor hygiene may complicate the health of women of childbearing age and it can lead to maternal mortality and severe/ unusual abdominal pain may lead to maternal death.

Conclusion

Women of childbearing age have a high level of knowledge of the causes of maternal health in Kano State. Danger signs of maternal mortality are disseminated to the women of child-bearing age through various methods. Knowledge dissemination about the prevention of maternal health complications are shared in different facilities in Kano state.

Recommendations

Based on the findings of the study, the following recommendations are made:

- i. Kano State Ministry of Health should facilitate the distribution of antenatal health facilities and apparatus in sufficient quantities in order to improve access to maternal health care for women of childbearing age in both rural and urban areas of the state.
- ii. KASG should ensure that antenatal health service providers should be given specific training programs, seminars and workshops to guide them in disseminating knowledge on maternal health care for women of childbearing age.

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Vigilante Groups Activities: Unlocking Opportunities in Community Policing for Tackling Security Challenges in Gombe Metropolis

By

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Abstract

The paper was initiated to assess the activities of vigilante groups as strategies of tackling security challenges in Gombe metropolis of Gombe state Nigeria. The objectives of the paper was to; to identify the activities of vigilante groups in curbing community security challenges and to determine the extent of community satisfaction for performance of the groups in the study area. Survey research design was used, the population of the study was fourteen thousand three hundred and sixty-five (14,365), out of which 43 people were sampled from five different categories of the population, where twelve respondents are sampled for interview and thirty-one respondents was sampled for focus group discussion. Purposive sampling technique was used. Two different instruments were used (interview schedule guide and focus group discussion). Interviews were conducted with three (3) officials of Gombe local government council, three (3) police officers from Gombe divisional police headquarters and three (3) traditional rulers. Focus group discussion was held with two (2) groups: (23) executives of vigilante groups across the metropolitan representing 23 branches as one group and eight (8) executives of various community-based organizations and professional groups representing 8 major groups across the metropolitan of Gombe as a group also. The result indicated that the groups performed various activities in tackling security challenges and also the performance of vigilante groups is effective in curbing security challenges in Gombe metropolis of Gombe state Nigeria. The paper conclude that vigilante groups in Gombe metropolis carryout various activities in tackling security challenges which among are; night patrol, dispute settlement and at the same time community members are satisfied with their performance. Finally, the researchers recommended that Government and relevant authorities should trained vigilante groups members in aspects of crime detection and knowledge of the law. This is to enable them to execute their activities efficiently

Keywords: Vigilante Groups, Activities, Unlocking, Community policing, Security Challenges

Introduction

Peace, safety and security are necessary and indispensable requirements for development and the attainment of good quality of life for in any human society. This is in view of the fact that they provide the requisite enabling environment for citizens to live and work towards the socio-economic and political development of the entire society (Groenewald and Peake, 2004). In this regard therefore, the absence of peace, safety and security stifles the human capacity to develop and heavily compromises the dignity and quality of life of both individuals and the society.

Furthermore, insecurity impacts negatively on all citizens through losses of property, life and limb, or through loss of confidence emanating from perpetual fear of violence. It is against this backdrop that the delivery of safety and security is considered a justifiable public good and the very essence of the state (Lubuva, as cited in Enechojo, 2013). Human safety and security are indeed human rights having a value of their own and serving an instrumental function in the construction of human contentment and prosperity (Odinkalu as cited in Enechojo, 2013).

However, in the recent time the problem of insecurity has become one of the global phenomena recording unprecedented escalation and increase globally. About two decades back, there has been a proliferation of unrivalled violence, the cases of kidnapping, abduction and wanton destruction of valuable infrastructures in Nigeria (Umar & Bappi, 2014). These mostly seem to be the activities of the youths that are socially unacceptable, triggered by enforced desired outcome from the constituted authority. This negative development is unfortunate and has become one of the security challenges facing man in the present societies across the globe (Igbo & Ikpa, cited in Yusuf, 2014).

This devastating experience goes beyond the developing or under developed countries like Nigeria. In the United States for example, there are lots of security challenges especially since 11 September, 2001 attack (Yusuf 2014). Violent incidents inspired by Al'Qaeda and ISIS's ideologies, as well as incidents inspired by racist, anti- government, and anti-abortion extremism, have greatly provoked a serious public concerns against terrorism to the highest level. The list of communities in the United States affected in 2015 includes San Bernardino, Colorado Springs, Chattanooga and Charleston. For many years, and especially since the terrorists' attacks of 2001, Federal, state and local policing agencies have been grappling with the challenge of determining how to address the threats of violent extremism America's territory (Enechojo, 2013). One set of responses has focused on intelligence collection and criminal law enforcement, including surveillance authorities in the Patriot Act, the creation of the Department of Homeland Security, and new

institutions such as state and regional intelligence fusion centers (Schanzer, Kurzman, Toliver, and Miller, 2016).

Moreover, African countries are usually referred to as barbaric among themselves because of high level of insecurity especially among developing countries in the continent. Article in *Le Monde Diplomatique* depicted Africa's police forces in a state of perpetual dysfunction, provocatively titled "Does Africa Need the Police?" (Schanzer, *et al* 2016). It described the patent low performance of African police services to address soaring crime rates against a rising wave of public dissatisfaction. The police were seems to be not only ill-equipped for the task but also corrupt, abusive, and discriminatory. In response to ineffective and repressive police practices, African communities came to increasingly rely on non-statutory policing systems to meet their security needs (Mathew, 2015)

However, as the Nigerian society progresses, especially with the advent of the current democratic system of government, new forms of violent crimes have also emerged and the society has become more insecure with many people getting involved in diverse sophisticated criminal activities (Otto & Ukpere, 2012). Recently many criminal acts have emerged especially in the northern part of Nigeria where different political thugs groups emerged with various derogatory and quite threatening nomenclature such as 'Kalare', 'ECOMOG' and 'Sara Suka' among others. In 2009, the issue of 'Boko Haram' reared its ugly head in North-East of the country and in 2020 the issue of kidnapping became a disturbing matter in the north also, Since then, these phenomenon have become a major security challenge in the entire

northern part of Nigeria.

It is obvious that the 'Boko Haram and kidnapping' phenomenon have seriously affected the Nigerian Police Force (NPF) and exposed its low performance to accomplish the bulk of its constitutional responsibility. In response to the increasing security challenges, the government has established other law enforcement agencies such as the Nigeria Security and Civil Defense Corps (NSCDC) in addition to the existing military police, to assist in the process of law enforcement and maintenance of order in the country. These established security institutions are charged with the responsibility to protect lives and properties of people and to ensure civic security.

Abraham & Inyang (2013) are of the view that the establishment of these security agencies seems to have little impact on the current security demands by the Nigerian masses. They contend that the low performance of the NPF and other related agencies in controlling the rising spate of crime, and the fact that these institutions are seen as oppressive tools in the hands of people in government especially the 'rich few', has given room for public distrust which ignited subsequent debates on how best to improve safety and security for Nigerians and foreigners residing and doing business in the country.

Nigerians and foreigners residing in Nigeria face violent criminal activities such as kidnapping, terrorism, pipeline vandalism, oil theft, rape, political assassinations and more, on escalating frequencies. In an attempt to curtail these crimes, some officers and men of the NPF who are at the forefront of performing security responsibility meet their untimely death in the hands of the perpetrators. This situation has made a

mockery of the formal police institutions and it is worrisome that the country is currently seeking for a lasting solution to the rising security challenges. Despite the much purported reforms made to improve the national police force, the huge security gap experienced over the years still persists.

As a response to the security challenge in the country, many communities and neighborhoods have made increasing recourse to informal security providers or what are sometimes called community based security structures in a bid to improve their safety and security particularly since the country's return to civilian rule on May 29, 1999. Reports indicate that as high as 50% of Nigerians patronize the services of these community based security operatives for their protection from criminal attacks (Alemika and Chukwuma, 2004). Vigilante group /Community policing or neighbourhood policing or proximity policing has been variously defined, but they are all mainly different ways of saying the same thing. For example, Laure and Rotimi (as cited in Shettima & Chukwuma, 2002) wrote that community policing entails community partnership in creating a safe and secure environment for all in which people take active part in their own affairs. Some state governments in Nigeria are also known to have tacitly or openly endorsed armed vigilante groups as part of their campaign against crime (Amnesty International, 2003; Akinyele, 2008). Security challenges in Gombe is not different from other areas in the country, the issue of burglary, pocket picking, snatching of valuable items like cell phones and women purses/bags are serious challenges in the study area

It is based on this background of security challenges in the country that this paper assessed the

activities of vigilante groups in tackling security challenges in Gombe Metropolis of Gombe State, Nigeria despite the fact that the NPF and other security operatives are doing their best in tackling such security challenges, but such effort is adjudged not only inadequate but also leaves much to be desired in terms proving security and safety of the citizenry particularly the common man.

Research Questions

The study was guided by the following research questions:

1. What are the activities of the vigilante groups in curbing community security challenges in Gombe Metropolis of Gombe State?
2. To what extent do communities satisfy with the activities of the vigilante groups in tackling security challenges in Gombe Metropolis of Gombe State?

Methodology

The study adopted descriptive survey research design, where the researcher used only fragment or portion of the entire population of the study. The decision by the researcher is in line with Nworgu (as cited in Mannir, 2016), who opined that descriptive survey is a method of gathering information from a sample of individual who are considered to be representative of entire population.

The population of this study was 14,365 which comprise various components including members of the vigilante group, Police officers, staff of Gombe Local Government Council, traditional rulers and community-based associations, professional and occupational groups. The sample size for this study was 43, in a qualitative study of this kind, a relatively small sample size involving the key informants for the

study is considered appropriate. The size of the samples is usually much lower than in quantitative research, the most common sampling strategy used in qualitative research can be labeled as *purposeful sampling* (Creswell, as cited in Elliot & Timulak, 2005). Therefore, the technique used in selecting the sample size for this study was purposive sampling technique for all the 5 categories of the population. The respondents selected are the appropriate people to respond to the various instruments designed for the study.

The researchers used two instruments to generate information for the study. The instruments are on interview schedule and a focus group discussion guide. The instrument were validated by staff from Department of Adult Education and Extension Service in Usmanu Danfodiyo University, Sokoto and one expert in measurement and evaluation in Federal College of Education (Tech) Gombe. Data analysis for this research is qualitative in nature where descriptive method was used in analyzing the data obtained. Where efforts were made in summarizing the information and examined the salient points from the data obtained for interviews and data obtained from focus group discussion session. The data obtained and analyzed was used as to answer the two research questions raised by this study.

Data Presentation and Analysis

Research question 1

What are the activities of vigilante groups in curbing community security challenges in Gombe Metropolis of Gombe State?

The result of this research question (What are the activities of vigilante groups in curbing community security challenges in Gombe Metropolis, Gombe

State?) was discussed by descriptive method of data analysis.

Findings from interview revealed that the vigilante groups in Gombe Metropolis carried out a number of activities in the effort to curb community security challenges in the area. Notable among the activities include: day and night patrol to prevent the perpetration of crimes and where these are committed, creating and maintaining security barricades. The members of the vigilante groups apprehend the suspects and hand them over to the Police for further interrogation and prosecution. In addition, the groups also carry out undercover operations with the aim of discovering potential crime suspects and sites and therefore, take proactive steps to stop crimes from being committed. The finding also reveals that the vigilante groups also undertake the disputes resolution within the communities. The researcher gathered that often disputing parties report their issues to the vigilante groups for intervention and settlement. In most cases such disputes are settled without reaching the police or the law courts. Thus, the vigilante groups in the area are vigorously involved in community

dispute resolution thereby contributing towards the enhancement of peaceful co-existence in the area. The interviewees further said that vigilante groups start their patrol by 10:00pm during which they question any suspicious individual they come across in the night. Information obtained indicates that community members themselves provide relevant information on security matters to the vigilante groups.

Accordingly, participants of FGD revealed that day and night patrols are the main activities executed for curbing community security challenges. Data gathered disclosed that their activities start from the grass root that is from unit to ward to branch to local government and to state level. At all levels any vigilante member has area of jurisdiction when discharging their duties especially night patrol. No any patrol team will penetrate or enter another team's jurisdiction but in the course of discharging their various responsibilities, they maintain a chain of communication with one another especially when they come across a suspect around their borders. Gombe local government area Vigilante group deputy chairman confirms that:

“Some time police officers do request the group to give them some members for a joint patrol or for a special operation or arrest.”

Similarly, one of the FGD participants from *Unguwa Uku* described how impressed he was with the activities of the vigilante groups in Gombe metropolis. He recalled that:

“there was a time in the night around 1:30am, I took my wife to hospital for a certain issue we came and across with vigilante members on patrol, that impressed me.”

Data gathered indicate that the vigilante groups do resolve community disputes when reported before taking the matter to the Police. A participant said the way the vigilante groups members are settling dispute is impressive he further added that:

“one day I was close to their office, I heard them settling two persons on the issue of debt which led the disputing parties to quarrel and later the vigilante group members intervened in the matter, which was successfully settled. I was delighted with the effort made by the group.”

Therefore, the vigilante groups carried lot of activities in respect of tackling security challenges in Gombe metropolis which include day and night patrol, arresting suspects and handing the suspects over to the Police, community dispute settlement among others.

Research Question 2

What is the level of community satisfaction with the activities of vigilante groups in tackling community security challenges in Gombe Metropolis of Gombe State?

The result of this research question (What is the level of community satisfaction with the activities

of vigilante groups in tackling community security challenges in Gombe Metropolis of Gombe State?) was discussed by descriptive method of data analysis. Findings from interview revealed that the stakeholders and communities of Gombe metropolis are satisfied with the activities of the vigilante groups in curbing security challenges in their areas. Respondents pointed out that day and night security patrols being carried out by the vigilante groups in the neighborhoods and market places contributed immensely in the reduction of social vices like pocket picking, stealing, burglary and handset snatching. An FGD participant maintained that:

“cases of stealing, burglary and activities of gang groups have reduced significantly in recent years.” especially the satellites communities have in

The researchers gathered that some years back, the people of Gombe metropolis suffered from the activities of political thugs called YAN KALARE but with the efforts of the vigilante groups and other security agencies such difficult times have become history. In the same vein, some neighborhoods in the metropolitan area,

the past suffered from incidences of night snatching of handsets and bags but with the assistance of the vigilante groups, the security challenge has been largely tackled in those areas. In relation to the achievements of the vigilante groups, one of the respondents remarked

“There was a time that political thugs called “Yan Kalare” used to go round our areas in the night causing mayhem. They flog and beat any person they come across with, they break any car they come across with on the street and even attack people with knives, machetes and other dangerous weapons in an exercise they tagged “*Shara*”, meaning (sweeping). But with the assistance of the vigilante groups, the situation has now been tackled. We now have peace in our neighborhoods.”

Similarly, the Divisional police officer Gombe division made a remark on the vigilante groups’ performance:

“The performance of vigilante groups is fairly okay. Our collaboration with vigilante groups reduced the rate of crime drastically. Vigilante groups do go night patrol and however any time

Similarly, they caught suspects they do handed them over to the police, thus some of them some time they do interrogate/tutor suspects whom sometime causes serious injury”.

One among the traditional rulers in area stated that:

“The performance of vigilante groups is fairly good, the intervention of the groups in curbing security challenges reduced the rate of crime committed in our areas”.

Findings from FGD also revealed that the vigilante groups performed fairly well. That is to say that the vigilante groups were effective in crime control. The participants pointed out that once it was 10:30 pm, the vigilante groups members would start

Unfamiliar faces were interrogated and those suspected were handed over to the Police for interrogation. Some of the participants of FGD also noted out that any time there was fight between

moving around the areas. Jekadafari residents remarked that: “Almost all the time if situation made me to come out in the mid night like going to the hospital I do across with them on patrol.”

gangs in the area, if the vigilantes are around political thugs they usually intervene and arrest the fighters for further interrogation or to hand them over to the Police. A resident of *Kagarawal* quarters in Gombe metropolis who was among the participants remarked that:

“There was a time in our areas we were having serious challenge of insecurity like handset and bag snatching and burglary, so we liaised with vigilante groups and we were having patrol together within shortest period of time the problem was reduced.” challenges based on the data gathered.

Equally, other participants especially from satellites areas in the study area such as Malam Inna, Arawa, Tunfure, Manawachi and Hammadu Kafi and London mai dorawa maintained that they also had patrol together with the vigilante groups and the security challenges they were having have reduced drastically. The activities of vigilante groups are therefore effective on community security

Discussion of Findings

The research study focused on the Assessment of Vigilante Groups Activities in Tackling Community Security challenges in Gombe Metropolis of Gombe State, Nigeria. Two research questions were raised for the assessment of activities of the vigilante groups on tackling community security challenges in the study area. What are the Activities of Vigilante Groups in Tackling Community Security challenges in Gombe Metropolis of Gombe State?

Findings from interview revealed that, the vigilante groups in Gombe Metropolis carry out a number of activities in the effort to curb community security challenges in the area. Notable among the activities include day and night patrol to prevent the perpetration of crimes and where these are committed, creating and maintaining security barricades. The members of the vigilante groups apprehend suspects and hand them over to the Police for further interrogation and prosecution. In addition, the groups also carry out undercover operations with the aim of discovering potential crime suspects and sites and therefore, take proactive steps to stop crimes from being committed. The vigilante groups also undertake the resolution of disputes within the communities. The researcher gathered that often disputing parties report their issues to the vigilante groups for intervention and settlement. In most

cases such disputes are settled without reaching the police. Thus, the vigilante groups in the area are vigorously involved in community dispute resolution thereby contributing towards the enhancement of peaceful co-existence in the area. Findings through FGD revealed that day and night patrols are the main activities executed for curbing community security challenges. Data gathered disclosed that their activities started from the grass root that is, from unit to ward to branch to local government and to state level. At all levels every vigilante member has his area of jurisdiction when discharging his duties especially night patrol. No any patrol team will encroach or enter another teams' jurisdiction but they do communicate to each other when they have suspects around their borders. Finally the data gathered indicate that vigilante groups do resolve community disputes when reported before taking the matter to Police. This finding is in agreement with Richard (2010) that the main activities of vigilante groups/ community policing are day and night patrol, creating barricades and dispute resolutions among community members or disputing parties in the study area. In the same vein, the findings are also in line with that of Johnson and Toyin (2013) who discovered the main activities of Odua People Congress and other self-help security outfit in the south-west Nigeria on crime prevention.

The findings of this study have slight difference with that of Johnson and Toyin (2013) in terms of location, scope and the number of groups being part of the study.

What are Extent of Community Satisfaction with the Activities of Vigilante Group in Tackling Security Challenges in Gombe Metropolis of Gombe State?

Findings from interview revealed that the stakeholders and communities of Gombe metropolis are satisfied with the activities of the vigilante groups in curbing security challenges. Respondents pointed out that day and night security patrols being carried out by the vigilante groups in the neighborhoods and market places. Stakeholders maintained that cases of stealing, burglary and activities of gang groups have reduced significantly in recent years. The researcher gathered that some years back the people of Gombe metropolis suffered from the activities of political thugs called YAN KALARE but with the efforts of the vigilante groups and other security agencies such difficult times have become history. In the same vein, some neighborhoods in the metropolitan area, especially the satellite communities such as Mallam Inna, Unguwa uku, and 'bypass' areas have in the past suffered from incidences of night snatching of handsets and bags by Kalare activities. Areas like Tunfure and London mai dorawa Unguwan Misau have suffered from the activities of armed robbers but with the assistance of the vigilante groups, the security challenge has been largely tackled in those areas. Findings from FGD revealed that the vigilante groups have performed fairly well. That is to say, that the vigilante groups were effective in crime control. They pointed out that once it was 10.30 pm, the vigilante groups' members will start moving around the areas, Unfamiliar faces were interrogated and those suspected were handed over

to the Police for interrogation. Some of the participants also noted out that any time when there was a fight between political thugs gangs in the area, if they are around they usually intervene and arrest the fighters for further interrogation or to hand them over to the Police. Based on the findings the community members and community security stakeholders are highly impressed with the activities of the vigilante groups in protecting their communities. This finding agrees with Ahmed (2012) on research titled *Community Based Security and Crime Control in Contemporary Nigeria: A Study of Alkaleri Local Government of Bauchi State*, where it was found out that the rate of crime became low after the formation of the vigilante groups in the area. However the study is in agreement with that of Simon (2011) who conducted a study on community policing and security challenges in Jos metropolis of Plateau state where he found that the rate of insecurity has dropped in some parts of the metropolitan due to the activities of community policing. The findings of the two studies agreed with each other because results from both indicate that the community members are satisfied with the performance of such groups. The two studies also have areas of difference which is the scope of the studies in terms of the groups involved in the study, Simon (2011) conducted his study on community policing in general whereas the present study is on the vigilante groups only. Lastly on the study conducted by Umar and Bappi (2014) *community policing and partnership: Opportunities and Challenges in Gombe state, Nigeria* where they found that community members in the study area prefer the services of these local Police (community

Police; Maharba and ('Yanbanga) and the joint task force called operation HATTARA than the police.

Conclusion

The conclusion of this study is based on the findings, that Vigilante Groups in Gombe Metropolis carry out a number of essential security services which include among others, routine patrol to deter criminal activities, arrest of suspects and handing them over to the Police and peaceful settlement of disputes and misunderstandings among community members, thereby providing safety and security as well as preventing violent conflicts.

The study found that there exist cordial relationship between the vigilante groups and security stakeholders in the Area. The vigilante groups are adjudged to be efficient in complimenting the efforts of the Local Government Council, the Nigeria Police, Traditional Rulers and other security stakeholders in enhancing security in the area. Most interestingly, community members are also satisfied with the activities of the vigilante groups. This is in agreement with Richard's findings (2010) on vigilantism and crime control in contemporary Nigeria

The researchers concludes that the activities of the vigilante group is found to be effective in crime control and the enhancement of security of lives and property in the area and that if the vigilante groups are given adequate support from government and wealthy individuals, they would perform better thereby playing effective complimentary role for the enhancement of security in the area which is an important prerequisite for the realization of sustainable development.

Recommendations

Consequent upon the findings of the study, the researchers made the following recommendations:

1. Vigilante groups should be trained by relevant security agencies in aspects of crime detection, and knowledge of the law in order to enhance their performance and improve on their existing activities and knowledge to enable them perform their duty with maximum efficiency and effectiveness.
2. Government and other relevant authorities should organize more vigorous mobilization and sensitization among community members to let them appreciate the importance of the vigilante groups and the need to support them in the efforts to provide better services.

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Reimagining Education through Community Partnership: Harnessing Collaboration, Volunteerism, and Local Engagement to Advance Inclusive and Transformative Learning in Nigeria

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Abstract

This conceptual paper critically examines the transformative potential of community-driven partnerships in reshaping Nigeria's educational landscape, which is plagued by systemic inequities and inadequate infrastructure. The study posits that fostering elite consensus around educational volunteerism is a critical precursor to successfully integrating non-formal systems such as Islamiyya schools and low-cost private institutions into a more inclusive national framework. Methodologically, it employs a robust conceptual analysis supplemented by an illustrative case study of the Kwapda-As Road Safety Initiative (KARSI) in Plateau State to ground its theoretical propositions in practical context. The analysis reveals that trust-building, participatory governance, and shared responsibility are foundational to developing resilient education systems that are responsive to local cultural and socioeconomic needs. The paper advocates for a fundamental reconceptualization of education as a shared community enterprise, arguing that leveraging local knowledge and volunteer networks can significantly expand access and improve learning outcomes. Key recommendations include the formulation of policies that recognize non-formal education, the establishment of cross-sector partnerships, and targeted strategies to address socioeconomic disparities that hinder educational access.

Keywords: Elite Consensus, Education Volunteerism, Community School Integration, Non- Formal Education, Partnership, Nigeria.

Introduction

Education is a vital aspect of human development, and its impact on individuals, communities, and societies cannot be overstated (Hansen, 2019; OECD, 2019). Nigeria is a federal republic with a population of over 200 million people, with a diverse cultural and linguistic landscape (National Population Commission, 2020; World Bank, 2020). The country has a long history of education, with a focus on Western-style education introduced by colonial powers (Fafunwa, 1974; Taiwo, 1980). However, the education system in Nigeria has faced numerous challenges, including inadequate funding, poor infrastructure, and a lack of community engagement (Adebayo, 2017; World Bank, 2018). Despite efforts to address these challenges,

the education sector in Nigeria continues to face significant obstacles (FGN, 2019; UNICEF, 2020). The concept of elite consensus has been identified as a key factor in shaping education policy and practice in Nigeria (Bature, 2017; Oloyede, 2019).

Elite consensus refers to the shared values and beliefs of the ruling elite, which can influence education policy and practice (Adebiyi, 2018; Olutunde, 2020). Community school integration has been proposed as a strategy for promoting inclusive education and addressing the challenges facing the education sector in Nigeria (Adeyemi, 2019; Akinsola, 2020). Non-formal education, Islamiyya education, and low-cost private education have been identified as key components of community school integration (Adebayo, 2017; FGN,

2019). Moreso, partnership and collaboration have been identified as essential strategies for promoting community school integration and changing the narrative of education in Nigeria (Afonja, 2019; Nwosu, 2020). Community engagement has been identified as a critical factor in promoting partnership and collaboration in education (Akinsola, 2020; Oloyede, 2019). Volunteerism has been identified as a key aspect of community engagement in education (Adebiyi, 2018; Olutunde, 2020).

Several initiatives have been launched to promote partnership, collaboration, and community engagement in education in Nigeria (FGN, 2019; UNICEF, 2020).

However, the impact of these initiatives has been limited by several factors, including inadequate funding and a lack of political will (Adebayo, 2017; Akinsola, 2020). Despite these challenges, there is evidence that partnership, collaboration, and community engagement can promote inclusive education and improve education outcomes in Nigeria (Adeyemi, 2019; Nwosu, 2020).

Therefore, it is essential to explore innovative strategies for promoting partnership, collaboration, and community engagement in education in Nigeria. This study aims to explore the role of elite consensus in promoting partnership, collaboration, and community engagement in education in Nigeria. Specifically, the study will examine the impact of elite consensus on community school integration and education outcomes in Nigeria. The study will also identify strategies for promoting partnership, collaboration, and community engagement in education in Nigeria.

A Conceptual Framework for Community-Driven Education

The pursuit of educational transformation in Nigeria necessitates a move beyond siloed definitions towards an integrated conceptual framework that elucidates the dynamic relationships between key constructs. This paper proposes that sustainable change is catalyzed by Elite Consensus, operationalized through structured Partnership and Collaboration, which subsequently empowers Community Engagement and Education Volunteerism to facilitate the strategic Integration of Alternative Education Models.

The Catalysts: Elite Consensus and Collaborative Partnerships

The initiation and sustainability of community-driven education reform are profoundly influenced by the establishment of elite consensus, which refers to the negotiated agreement and shared commitment to educational goals among influential stakeholders, including policymakers, traditional leaders, and prominent business figures (Levin, 2008; Adebiyi, 2020). This consensus provides the essential political legitimacy and resource mobilization necessary to overcome systemic inertia, creating an enabling environment for reform. This top-down support is operationalized through formalized partnership and collaboration, which denotes the structured process of multi-stakeholder engagement where government agencies, civil society organizations, and private entities work in concert, pooling resources, expertise, and authority to achieve common educational objectives (Afonja, 2019; Nwosu, 2020). Without this foundational layer of high-level agreement and institutional cooperation, grassroots initiatives often struggle to achieve scale and sustainability, remaining

isolated projects rather than integral parts of the national education strategy.

The Mechanisms: Community Engagement and Volunteerism

Elite consensus and partnerships create the platform for activating two critical mechanistic components: community engagement and education volunteerism. Community engagement is defined as the active and intentional involvement of local community members in the pedagogical, managerial, and decision-making processes of education, fostering a sense of collective ownership and responsibility (Hansen, 2019; OECD, 2019). This engagement manifests in school-based management committees, participatory budgeting, and community-led monitoring of educational quality, ensuring that schooling is responsive to local cultural and socioeconomic contexts. Concurrently, education volunteerism functions as the practical expression of this engagement, referring to the contribution of time and skills by individuals including professionals, retirees, and university graduates to support teaching, mentoring, administration, and infrastructure development (Adebisi, 2018; Hart, 2001). Volunteerism acts as a powerful force multiplier, directly addressing resource gaps such as teacher shortages and supplementing formal education with locally relevant knowledge, thereby enhancing both access to and the quality of learning experiences for children.

The Targets for Integration: Alternative Education Models

The ultimate objective of the aforementioned catalysts and mechanisms is the strategic incorporation of Nigeria's diverse educational landscape into a more cohesive and inclusive system. This involves the

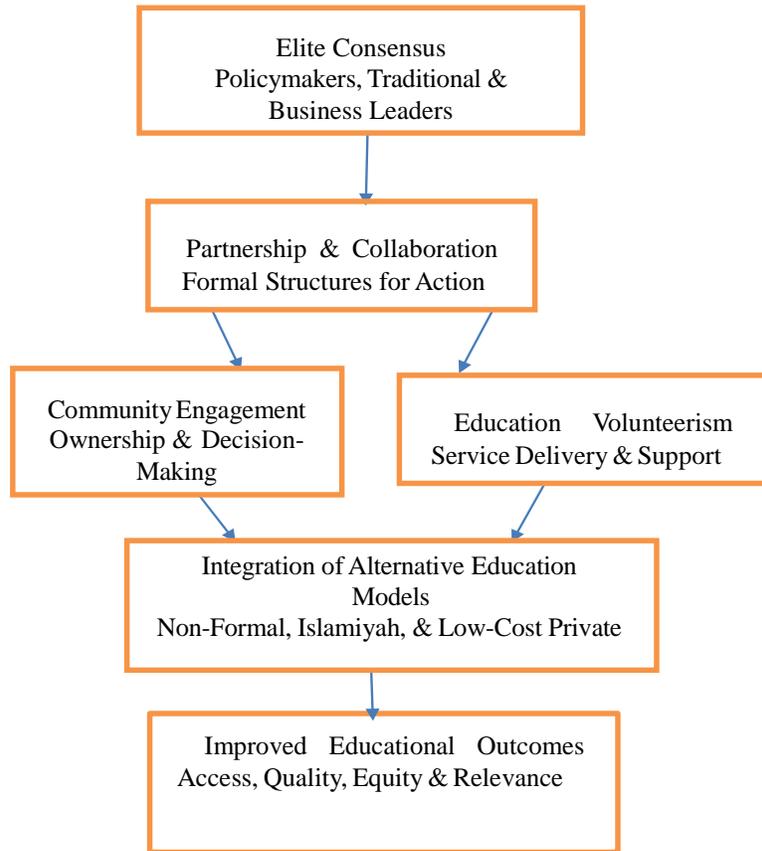
deliberate integration of three predominant alternative models that currently serve millions of Nigerian children. Non-formal education encompasses organized, structured learning outside the established formal system, designed to provide literacy, numeracy, vocational skills, and other competencies to out-of-school youth and adults (Adebayo, 2017; UNESCO, 2020). Islamiyya education, a specific and culturally significant non-formal subsystem, provides instruction based on Islamic values and principles, focusing on Quranic studies, Arabic language, and moral education, particularly throughout northern Nigeria (FGN, 2019). Finally, low-cost private education refers to schools operated by private entities that charge modest fees, often emerging in low-income communities where public education is perceived as inadequate or inaccessible (Tooley, 2009; Adebisi, 2018). The integration of these models does not imply assimilation but rather their formal recognition, quality assurance, and strategic alignment with national educational goals to create a pluralistic and resilient ecosystem that leverages all available resources to combat educational exclusion.

Table 1: Synthesis of Core Concepts and Their Interrelationships

Concept	Primary Function	Key Actors	Interaction with Other Concepts
Elite Consensus	Catalyst & Enabler	Legitimizes Policymakers, Traditional Leaders, Business Elites	partnerships; mobilizes resources for volunteerism and integration.
Partnership Collaboration	& Operational Structure	Government, Private Community Representatives, NGOs, Sector,	Channels elite consensus into actionable programs; facilitates resource sharing for community initiatives.
Community Engagement	Mechanism for Ownership	Parents, Local Leaders, Community Members	Drives volunteerism; provides local context for integrating alternative models.
Education Volunteerism	Mechanism for Delivery	Professionals, Retirees, Graduates, Local Volunteers	Implements community engagement on the ground; supports teaching in alternative education models.
Integration of Alternative Models	Strategic Outcome	Education Planners, School Proprietors, Community Leaders	Becomes the tangible objective achieved through the effective function of all above concepts.

Visual Concept Map: Theoretical Pathways to Impact

The following diagram illustrates the theoretical framework and that hypothesised pathways of change:



Overview of Nigeria's Education System

Nigeria's education system, structured into primary, secondary, and tertiary levels, remains a critical yet beleaguered pillar of national development, currently grappling with the profound dual shock of pre-existing deficiencies and the COVID-19 pandemic. The foundational 6-3-3-4 system mandates nine years of compulsory basic education, comprising six years of primary and three years of junior secondary education, which is constitutionally guaranteed to be free and universal (Universal Basic Education Commission [UBEC], 2023). Despite this legal framework, the system's performance is starkly illustrated by the disconcerting

statistic that the country accounts for one in every five out-of-school children globally, with current estimates soaring to approximately 20 million children denied access to formal education (UNICEF, 2023; World Bank, 2022). The federal government's response, articulated in the Ministerial Strategic Plan (2018-2022) and the COVID-19 Recovery Plan, has been hampered by chronic underinvestment, with education's share of the national budget persistently languishing between 5% and 7%, a figure drastically below the UNESCO recommended benchmark of 15-20% (BudgIT, 2023; FME, 2021). This financial constraint directly manifests in a dire shortage of physical infrastructure; UBEC (2023) reports a deficit of over one million classrooms, with many existing structures in a state of severe disrepair, lacking basic amenities like electricity, potable water, and sanitary

facilities, thereby creating an profoundly uncondusive learning environment that stifles pedagogical effectiveness and student engagement. Consequently, the system is characterized by deeply entrenched inequities, where access and quality are disproportionately determined b socioeconomic status, geographic location, and gender, thereby perpetuating a cycle of intergenerational poverty and social exclusion that community- based initiatives are uniquely positioned to disrupt through localized, context-specific interventions.

Challenges Facing Nigeria's Education System & Community-Driven Solutions

The most pressing challenge confronting Nigerian education is the catastrophic crisis of out-of-school children, a situation exacerbated by the COVID-19 school closures which saw an estimated 3-5 million additional students drop out, disproportionately affecting girls and children from low-income households in the North-East and North-West regions (World Bank, 2022; UNICEF, 2023). This access crisis is compounded by a severe learning poverty crisis, where an estimated 70% of 10-year-olds in Nigerian schools are unable to read and understand a simple text, indicating a fundamental failure in the delivery of quality instruction (World Bank, 2022). The root of this quality deficit is a multifaceted teacher crisis, encompassing not only a quantitative shortage estimated at over onemillion including inefficient resource allocation, bureaucratic bottlenecks, and corruption,

severely undermine policy implementation and accountability mechanisms, ensuring that even well-intentioned reforms rarely translate into tangible classroom-level improvements (EFOR, 2022; BudgIT, 2023). Crucially, each of these systemic failures presents a strategic entry point for community partnership interventions. For instance, the critical shortage of qualified teachers in remote rural areas could be immediately mitigated by the formal recruitment, training, and deployment of educated local volunteers from within the community, who possess intrinsic cultural and linguistic familiarity that enhances student engagement and learning retention. Similarly, the infrastructure gap can be addressed through community-led resource mobilization and maintenance projects, where local councils and parent-teacher associations (PTAs) collaborate to build makeshift classrooms, provide furniture, and ensure the basic security and upkeep of school facilities, thereby fostering a powerful sense of local ownership and commitment that is absent in top-down government projects. Moreover, to combat governance leakages, community-based monitoring committees composed of respected local leaders can be institutionalized to track school funding, monitor teacher attendance, and provide transparent feedback to authorities, effectively serving as an accountability mechanism that deters mismanagement and ensures resources directly benefit the intended beneficiaries.

teachers but also a qualitative deficiency, where a significant portio

Table 2: Infographic on Policy Targets vs. Reality

Policy Target / Indicator	Official Goal (e.g., ESP 2021-2025)	Current Reality (2023)
Out-of-School Children	Reduce to zero	20 million (UNICEF)
Education Budget Allocation	15% of national budget	5.4% (2023 Appropriation Act)
Teacher-Pupil Ratio	1:40	1:60 (Average, worse in rural areas)
Schools with Basic Sanitation	100%	<50% (UBEC)
Learning Poverty (Grade 4 Reading)	<20%	70% (World Bank)

The Integrative Role of Alternative Education Models

Non-formal education (NFE) constitutes a critical and dynamic component of Nigeria's educational ecosystem, strategically addressing gaps in access and relevance that the formal system has been unable to fill. Its role extends beyond providing a "second chance"; it functions as a vital mechanism for sustainable community development, equipping out-of-school youth and adults with tangible literacy, numeracy, and vocational skills that directly enhance employability and economic resilience (World Bank, 2022; UNESCO, 2021). For instance, a vocational training program in Lagos State, implemented through a partnership between a local NGO and the state's Ministry of Women Affairs, reported that over 70% of its graduates in tailoring and ICT skills secured sustainable livelihoods or started small businesses within one year of completion, demonstrating a direct positive correlation between NFE and poverty reduction. Furthermore, NFE programs are instrumental in promoting crucial societal values, such as interfaith dialogue and health awareness, thereby fostering social cohesion and

building community resilience against conflict and disease (UNDP, 2020). However, the potential of NFE is severely constrained by a pervasive lack of standardization, inadequate funding, and insufficient pedagogical training for facilitators, which often leads to inconsistent quality and outcomes. To address these constraints, a dual approach is necessary: first, the development of a nationally recognized framework for accrediting NFE programs and competencies, ensuring skills are transferable and valued in the labour market; and second, the strategic integration of NFE pathways into the formal education system, allowing for the recognition of prior learning and creating avenues for learners to transition into formal schooling or higher education if they so choose.

Islamiyya Education: Between Tradition and Modernization

Islamiyya schools represent a deeply entrenched and culturally significant educational subsystem, particularly in northern Nigeria, where they serve millions of students by combining religious instruction with foundational literacy and numeracy. Their historical role in preserving Islamic identity and promoting moral character is undeniable; however, their contemporary

challenge lies in evolving to meet modern educational standards without compromising their core values (Hoechner, 2018). The primary constraints hindering this evolution are the lack of a unified curriculum, variable teacher quality, and inadequate infrastructure. A compelling case study from Kano State illustrates a potential pathway forward: the "Integrated Islamiyya Program," a collaboration between the state government and a coalition of Islamic scholars, introduced a revised curriculum that blended the standard national curriculum for core subjects (English, Mathematics, Basic Science) with traditional Islamic studies. Crucially, the program provided specialized training for the Mallams on modern pedagogical techniques and deployed volunteer graduate teachers from the community to assist with the new subjects. Within two years, participating schools saw a 35% increase in literacy rates in both English and Arabic among female pupils and a significant rise in transition rates to formal junior secondary schools (Kano State Ministry of Education, 2021). This success underscores the viability of a co-designed solution. Therefore, we propose the piloting of a Localized Accreditation Framework (LAF) for Islamiyya schools. This framework would be developed by a council comprising representatives from the Universal Basic Education Commission (UBEC), state ministries of education, the Nigerian Supreme Council for Islamic Affairs (NSCIA), and civil society partners. The LAF would establish minimum standards for learning environments, facilitator qualifications, and learner outcomes in core competencies, while

explicitly protecting and valuing the schools' religious and cultural mission, thereby ensuring both quality and cultural integrity.

Low-Cost Private Schools: Navigating Quality and Affordability

Low-cost private schools (LCPS) have emerged as a pragmatic response to the deficit in public education provision, particularly in peri-urban and densely populated low-income areas where public schools are overcrowded or non-existent. These schools operate on a market-based model, offering affordable education driven by parental demand for accountability and perceived quality, which is often lacking in the public sector (Tooley & Dixon, 2019). While they have undoubtedly increased access, their operation is fraught with challenges related to quality assurance, as many operate with unqualified teachers, substandard infrastructure, and unapproved curricula in an effort to keep fees low. The government's initiatives to support them through training and resources, while well-intentioned, are often fragmented and insufficient to drive systemic improvement. A more sustainable solution involves creating structures for managed partnership. A successful vignette from Ogun State shows how a "School Cluster" model can work: five low-cost private schools formed a coalition to share resources, including a trained science teacher and a shared library, and collectively negotiated better prices for textbooks and learning materials. Furthermore, a local NGO partnered with the cluster to provide a condensed, targeted teacher training program on foundational literacy and numeracy teaching techniques. This micro-collaboration led to a measurable 15%

improvement in aggregate student performance across the partnered schools on standardized baseline tests within 18 months (EDUCO Nigeria, 2022). Scaling this model requires policy innovation. We recommend that state governments establish Accreditation Support Units that would not merely regulate but actively support LCPS. These units would provide access to curriculum guidance, facilitate bulk purchasing of materials to reduce costs, and offer subsidized, mandatory teacher certification programs. In return for meeting progressively higher quality standards within a defined timeframe, schools could gain access to targeted per-pupil subsidies, effectively making them government-supported partners in educational delivery rather than overlooked or marginalized entities.

A Model for Stakeholder Collaboration in Nigerian Education

Sustainable educational transformation in Nigeria is contingent upon moving beyond theoretical recognition of stakeholder roles to the operationalization of a coherent and measurable collaboration model. This model posits that effective change is driven by a synergistic relationship between elite consensus, which provides the strategic direction and resource mobilization; structured partnerships, which create the formal mechanisms for action; robust community engagement, which ensures local ownership and relevance; and strategic volunteerism, which delivers on-the-ground support and amplifies human capital. The interdependence of these elements forms the conceptual heart of a viable strategy for system-wide improvement, transforming isolated

interventions into a sustainable ecosystem of support for Nigerian schools.

The Foundation: Cultivating Elite Consensus

Elite consensus is not merely an abstract agreement but a dynamic process of negotiation and commitment-building among influential actors, including policymakers, traditional rulers, religious leaders, and prominent business figures. Its primary function is to legitimize community-driven initiatives and unlock critical political and financial resources that would otherwise be inaccessible (Levin, 2008; Adebisi, 2020). Progress towards a meaningful consensus cannot be assumed; it must be assessed through tangible indicators. A simple yet effective monitoring rubric would track: (1) the frequency and level of multi-stakeholder dialogue, measured by the regular convening of designated liaison committees with documented attendance from all key sectors;

(2) the translation of dialogue into resource commitments, evidenced by budget allocations from state governments or in-kind contributions from private sector partners towards agreed-upon priorities; and

(3) policy alignment, demonstrated by the enactment of local government ordinances or state-level policies that formally recognize and support community schools and volunteer programs. This shift from vague intention to measurable action is the critical first step in building a foundation for sustainable collaboration.

The Framework: Structuring Partnerships and Engagement

Elite consensus is operationalized through

formalized partnerships that provide the framework for sustained collaboration. These partnerships leverage the distinct strengths of each sector: government provides policy legitimacy and public funding, civil society offers implementation agility and community connections, and the private sector contributes technical expertise, innovation, and additional financial resources (Hansen, 2019; OECD, 2019). The efficacy of this framework is ultimately determined by the depth of community engagement, which transforms beneficiaries into active owners of the educational process. This involves embedding community representatives particularly parents and local leaders in school governance structures like Boards of Governors, giving them real decision-making power over budgets, teacher welfare, and school improvement plans, thereby fostering authentic shared ownership and accountability (Adebiyi, 2018).

To illustrate the model's application, consider two distinct contexts. In an urban setting, a successful partnership may involve a corporate sponsorship model. For example, a multinational technology company could partner with a state government to establish and maintain digital literacy labs in a cluster of public schools. The company provides the hardware, software, and technical training for dedicated volunteer IT professionals from its staff, while the government commits to providing the physical space, reliable electricity, and curriculum integration. The community, through the PTA, is responsible for the lab's security and maintenance, ensuring sustainability. Conversely, in a rural setting, a women's cooperative model can be

highly effective. A group of mothers could form a cooperative to support an early childhood care center. They might volunteer on a rotating schedule to provide childcare, prepare meals from communal farms, and manage micro-savings schemes to pay a stipend to a trained preschool teacher. A local NGO could partner with them by providing pedagogical training and initial learning materials, while the local traditional council allocates a parcel of land for the school. These concrete examples provide emulatable blueprints for action.

The Execution: Leveraging Strategic Volunteerism

Within this framework of partnership and engagement, volunteerism functions as the essential mechanism for execution, directly addressing resource gaps and enhancing educational quality. Strategic volunteerism moves beyond ad-hoc assistance to involve the deliberate deployment of skilled and unskilled volunteers in roles aligned with community-identified needs (Hart, 2001; Bragg, 2006). This includes university graduates serving as teaching assistants in core subjects where teacher shortages are most acute, retired professionals mentoring students and offering career guidance, and local artisans leading practical vocational training workshops. The sustainability of volunteer efforts depends on clear role definitions, ongoing training and supervision, and formal recognition of their contributions by both school authorities and community leaders, ensuring they are valued partners rather than temporary stopgaps.

Table 3: Monitoring Rubric for Stakeholder Collaboration Initiatives

Indicator Category	Specific Metric	Data Source	Frequency of Review
Process Indicators	Meeting frequency of stakeholder committees	Committee attendance records	Quarterly
	Development of joint action plans	Documented work plans & MOUs	Bi-Annually
Input Indicators	Value of cash/in-kind contributions from private sector & community	Donation records, budget reports	Annually
	Number of trained and active volunteers	Volunteer management logs	Quarterly
Outcome Indicators	Student attendance rates	School attendance registers	Termly
	Student performance in core subjects (e.g., literacy/numeracy gains)	Standardized assessment scores	Annually
	Community perception of school improvement	Focus group discussions & surveys	Annually

Analysis of Current Initiatives and Programs in Nigerian Education

A critical assessment of initiatives promoting partnership, collaboration, and community engagement in Nigerian education reveals a diverse landscape ranging from large-scale government interventions to hyper-local grassroots movements. The effectiveness of these programs is not uniform, varying significantly based on their design, implementation fidelity, funding sustainability, and most importantly, the depth of genuine community ownership. While top-down initiatives like those led by the Universal Basic Education Commission (UBEC) provide essential policy direction and capital for infrastructure, they often grapple with

bureaucratic delays and a one-size-fits-all approach that can overlook local nuances (World Bank, 2022). Conversely, programs originating from non-governmental actors, such as USAID-funded Northern Education Initiative Plus, have demonstrated notable success in improving foundational literacy and numeracy in targeted states by employing evidence-based pedagogical techniques and formalizing community support structures (USAID, 2021). However, their long-term sustainability remains precarious, often hinging on the continuation of external donor funding rather than being embedded within local government systems and budgets, raising serious questions about their scalability beyond the project lifecycle. The following table provides a comparative overview of key initiatives, highlighting their objectives, reach, and documented outcomes:

Table 4: Overview of Select Education Initiatives in Nigeria

Program Name	Lead Agency	Primary Objective	Geographic Reach	Key Outcomes & Challenges
UBEC		To decentralize		Improved school accountability and
School-Based Management Committee (SBMC) Initiative	Federal Government (UBEC)	school governance through community committees	Nationwide	minor infrastructure projects in some localities. Challenges: Inconsistent functionality; limited power over core issues like teacher quality. Outcomes: Over 50% of participating students achieved reading fluency in Hausa; trained over 20,000 teachers. Challenges: Donor-dependent; sustainability post-funding is a concern. Outcomes:
Northern Education Initiative Plus	USAID	To strengthen basic education systems and increase access in the North	Bauchi, Sokoto	Fellows' students show measurable learning gains; building a leadership pipeline. Challenges: Small scale relative to need; high fellow turnover. Outcomes: Construction and renovation of classrooms; provision of scholarships.
Teach For Nigeria Fellowship	NGO (Teach For Nigeria)	To build a movement of leaders addressing educational equity	Lagos, Ogun, Oyo, Abuja, Kano, Kaduna, Kwara	Challenges: Small scale relative to need; high fellow turnover. Outcomes: Construction and renovation of classrooms; provision of scholarships.
Dangote Foundation Education Program	Private Sector (Dangote)	To support education infrastructure and scholarships	Northern Nigeria	Challenges: Primarily infrastructure- focused, with less emphasis on pedagogical quality.

In-Depth Analysis: The Teach For Nigeria Fellowship

A flagship program worthy of detailed analysis is the Teach For Nigeria (TFN) fellowship, which embodies a partnership model between a social enterprise, state governments, and local communities. Its objective is to address educational equity by recruiting high-achieving Nigerian graduates and professionals to teach for two years in underserved schools while cultivating a lifelong commitment to educational reform among its alumni network. Key lessons learned from its implementation include the critical importance of robust pre-service and ongoing professional development for fellows, who often enter the classroom with subject matter expertise but limited pedagogical training. A significant challenge has been navigating the complex bureaucratic environments of state ministries of education to secure placements and ensure fellows are integrated into the school system without resentment from regular staff. Furthermore, the program's community acceptance is high, as reported in internal surveys, largely because fellows often engage in community mapping and extracurricular projects that address localized needs beyond the classroom, thereby building trust and demonstrating commitment (Teach For Nigeria, 2022). The primary challenge to scalability is financial, as the model requires significant investment per fellow, making it difficult to scale to the level needed to address the country's massive teacher shortage without deeper, more sustained public-sector adoption and funding.

The Vital Role of Grassroots and Community-Based Initiatives

Beyond these structured programs, the true engine of innovation and resilience often lies in organic, bottom-up initiatives that exemplify profound local agency. These are frequently overlooked in national policy discourses yet are crucial for filling gaps and demonstrating contextually relevant solutions. For instance, in numerous rural communities, parent-teacher associations (PTAs) have transcended their advisory roles to directly manage schools where teachers are absent, pooling resources to hire and pay community teachers. In the Niger Delta region, local NGOs have established "village reading circles," where volunteers use donated books to run after-school literacy programs for children with no access to libraries. Faith-based groups, including churches and mosques, routinely organize weekend tutoring and career counseling sessions for youth in their congregations, leveraging the trust and infrastructure of religious institutions. A powerful example of local agency is the proliferation of parent-led sanitation drives, where mothers and fathers organize monthly rotations to clean school facilities, repair broken furniture, and create a more conducive learning environment, actions that often spark broader engagement with school authorities on issues of quality. These initiatives, though often small in scale, are highly sustainable because they are born from immediate necessity, are funded through local resource mobilization, and are built upon pre-existing social capital and trust, making them powerful models for authentic community engagement.

Conclusion and Suggestions

This paper concludes that transcending the profound challenges within Nigeria's education system requires a paradigm shift from centralized control to collaborative, community-driven governance. The proposed conceptual model, validated by the KARSII illustration, identifies elite consensus as the foundational catalyst for effective partnerships, volunteerism, and the successful integration of diverse educational providers. Consequently, sustainable reform is contingent upon policies that actively foster multi-stakeholder ownership and a shared commitment to collective action. Based on this analysis, the following suggestions are offered:

Firstly, national and state-level policymakers should develop and enact inclusive policy frameworks that formally recognize and integrate non-formal and low-cost private schools into the educational landscape, providing them with standardized curricula support and quality assurance mechanisms. Secondly, community leaders and civil society organizations must institutionalize partnership structures by establishing formal liaison committees that facilitate continuous dialogue, resource sharing, and collaborative planning between all educational stakeholders. Finally, international development partners and NGOs should prioritize funding and capacity-building programs specifically targeted at enhancing the pedagogical skills of volunteer teachers and strengthening the administrative capacity of community-based education management boards to ensure long-term sustainability and improved learning outcomes.

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Chitosan-Zinc Oxide Composites used as Adsorption Material for Methyl Orange Colorant from Waste Water

By

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Abstract

Industrial colorants such as methyl orange are found to be toxic and harmful contaminants which pollute water bodies. Chitosan is an important biodegradable material formed from acetylation of chitin which is used in a number of applications including adsorption and drugs manufacturing. This research was aimed at synthesizing and characterizing chitosan-ZnO composites for adsorption of methyl orange colorant which is one of the toxic and harmful pollutants found in waste water. The chitosan used was obtained from Sigma Aldrich Company with degree of deacetylation of 90% and used directly in the preparation of the composite which was later subjected to the adsorption of the colorant through variation of adsorbent dosage and stirring time. The characterization of the composite was done using Fourier Transform Infrared Spectroscopic analysis (FTIR) revealing the peaks indicating its successful formation. The maximum adsorption of methyl orange colorant was measured using UV-Visible spectrophotometer which was found to be highest at the composite dosage of 0.6g

Key words: Chitosan, Chitin, Composites, Methyl orange, FTIR analysis

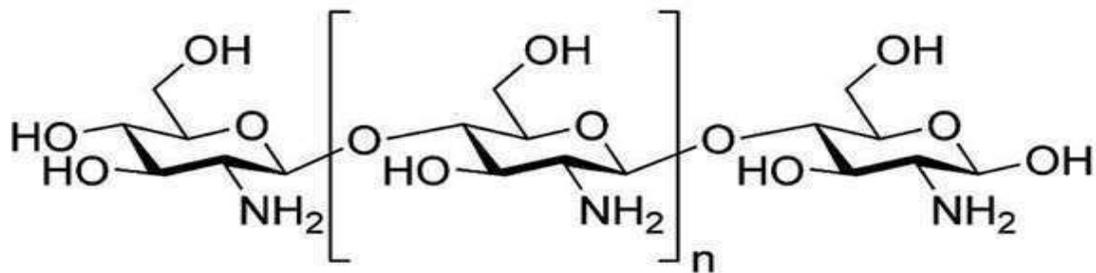
Introduction

Pollutants from various industries such as mining operations, tanneries, agricultural effluents and waste disposal from a number sources of environmental pollution including colorants bring about a major threat to the ecosystem (Kumar, 2019) due to their toxicity, they can cause different diseases through their accumulation in the living cells (Kazi *et al.*, 2023). Dyes from industries including methyl orange released into water bodies are found to be harmful to both human and aquatic lives. They are toxic with a high effect to the environment (Haque *et al.*, 2021). Textile effluent is a complex and highly variable mixture of many polluting substances, including dyes, leading to disruption of the total ecological balance of the receiving water system (Hassani *et al.*, 2008). Inorganic and organic

pollutants affect the life of both humans and other living organisms (Soylac *et al.*; 2021). Adsorption is found to be the best method for removing organic pollutants (Zhang, *et al.*; 2020). However, some adsorbents such as activated carbon and clay show limited adsorption capability with time (Victor *et al.*, 2025). Chitosan as an adsorbent is observed to be good for the removal of colorants and heavy metals from waste water (Nghah *et al.*; 2011)

Chitosan is a well-known compound obtained from chitin found in many organisms such as insects, and marine invertebrates, formed by the alkaline deacetylation of the chitin. (Muzzareli *et al.*, 2012). It is a natural linear bio- polyaminosaccharide (Kumar *et al.*, 2004), which is a cheap and nontoxic (No *et al.*, 2003), biodegradable (Kumar, *et al.*; 2020) and renewable material (Ayub *et al.*, 2020) used in the removal of toxic colorants and harmful heavy materials ions (Akakuru and Isiuku, 2018)

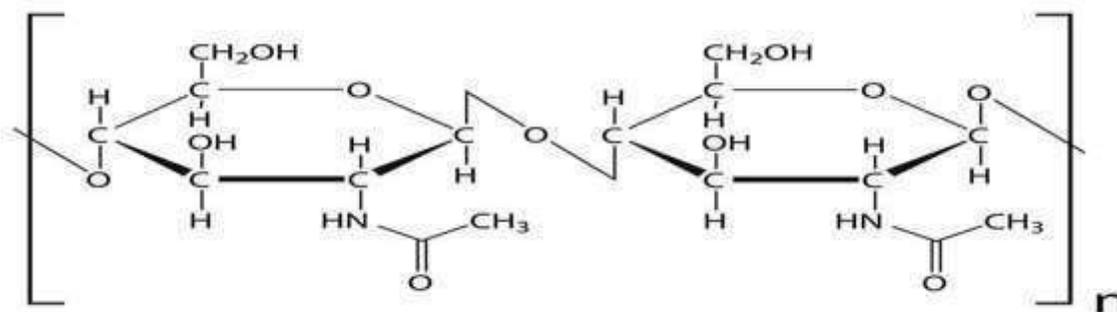
The structure of chitosan is presented in Scheme 1 below



Scheme 1 Structure of Chitosan

Chitin a complex carbohydrate having a chemical formula $(C_8H_{13}O_5N)_n$ with acetyl amine groups

The structure of chitin is presented in Scheme 2 below



Scheme 2 Chemical structure of chitin

Chitosan is formed through N-deacylation of the chitin molecule, as introduced in the chart below.

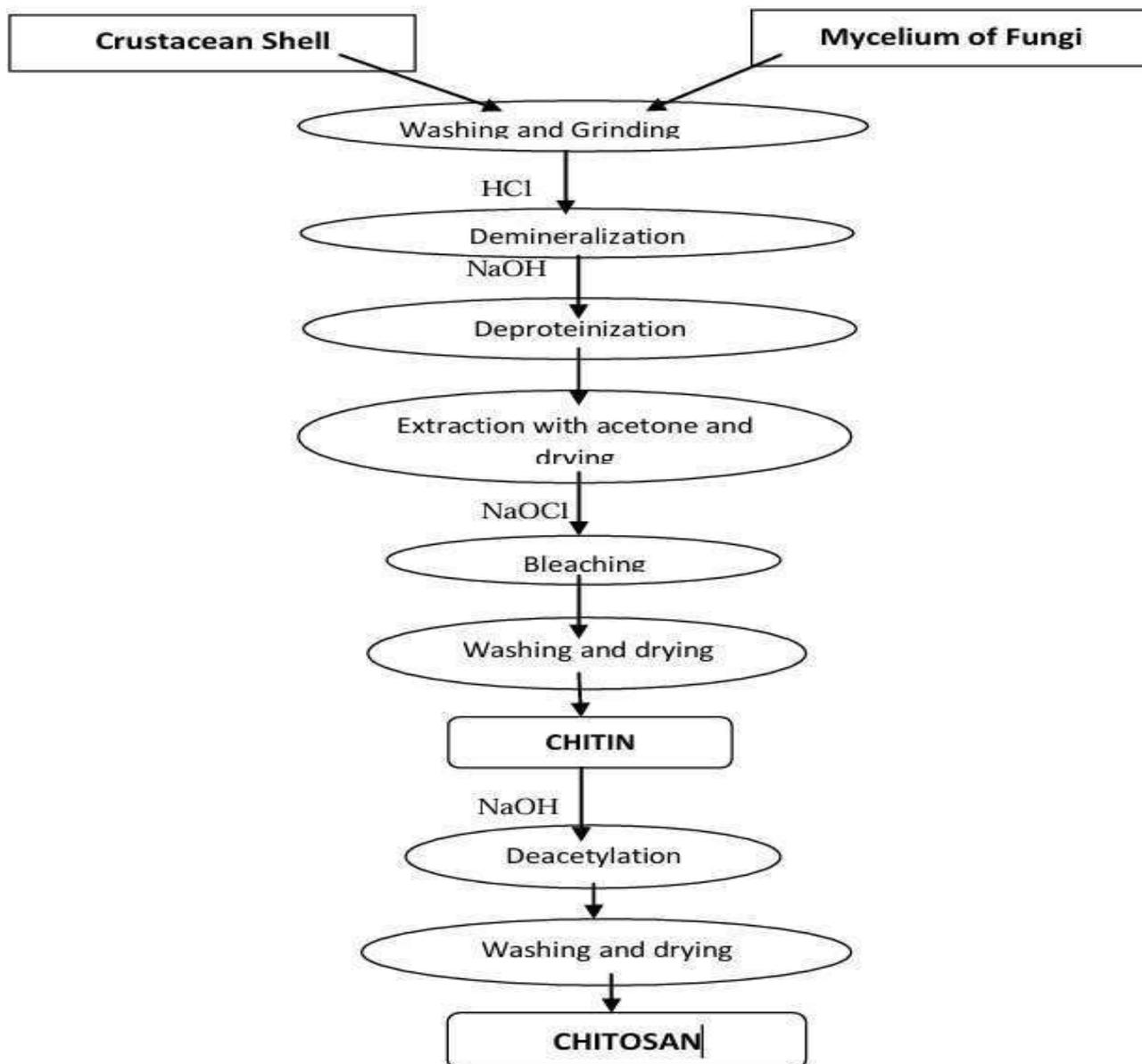


Fig 1 flow chart for the Preparation of chitosan

Modified chitosan exhibits exceptional ability to remove heavy metal ions and colorants, making it valuable for treating polluted water. Modifications of chitosan increase the binding sites for selective

pollutants uptakes (Thomas *et al.*, 2016). Chitosan zinc oxides composites are made from combining the two components together leading to improvement in properties such as mechanical strength and

surface area as well as reacting site. It is applied in a number of applications such as adsorption of colorants (Kyohairwe *et al.*, 2023) and heavy metals (Eldenary *et al.*, 2023), photocatalytic activity (Elemike *et al.*, 2021) and improvement in the mechanical strength of materials (Rahman, et al, 2018) Zinc oxide is an inorganic compound with the formula ZnO. It is used as additive and adsorbent because of its high surface area (Battez *et al.*, 2008), and produced synthetically. (De Liedekerke, 2006).

Composites are designed to achieve specific combinations of properties, such as strength (Rahman, et al, 2018), increase in the adsorption sites and surface area, weight, or resistance to environmental factors that are not possible with the individual components alone. (Zhu *et al.*, 2022)

According to Kyohairwe *et al.*, 2023, a novel composite chitosan graft poly (acrylic acid-co-N-isopropylacrylamide)/graphite oxide (CTS-g-P(AA-co-NIPAM/GO) was synthesized and used to remove methylene blue (MB) and fuchsin basic (FB) from aqueous solutions. Adsorption capacities of MB and FB increased from 842.1 and 633.7 mg/g to 1496.3 and 1000.8mg/g, respectively. Kinetic study showed that the adsorption is in accordance with the Pseudo first-order kinetic model. Chitosan graft poly (acrylic acid-co-2-acrylamide-2-methyl propanesulfonic acid)/graphite oxide composite hydrogel was synthesized and used in the removal of rhodamine 6G and methyl violet from aqueous solutions. The adsorption capacities of

R6G and MV were increased by 57.26% and 26.39%, respectively, compared with CTS-g-P (AA-co-AMPS graft copolymer.. (Zhu *et al.*, 2022)

Surface of graphene oxide was modified with chitosan (CS) and then grafted with ZnO nanoparticles. GO/ZnO/CS was investigated as adsorbent for the elimination of Pb (II) and Cr (VI) ions from aqueous solutions. Pb (II) ions were having 92.4 % removal efficiency while 70.5 % removal was removal efficiency of Cr (VI) ions (Manzoor, *et al.*, 2024).

Chitosan grafted polyacrylonitrile (Cs-g- PAN) was fabricated. Nanoparticles of ZnO were doped into the Cs-g-PAN matrix to prepare chitosan-grafted polyacrylonitrile/ZnO (Cs-g-PAN/ZnO). For comparative study, pure ZnO and nanocomposite of PAN doped with ZnO (PAN/ZnO) were also prepared and tested for Iron(II) removal from waste water. The effects of parameters including temperature were tested. The removal efficiency was achieved 100 % under the optimum condition of pH 7, 30 min, adsorbate concentration 0.93 mg/L, and adsorbent dosage 0.05 g/L at room temperature. (Eldenary *et al.*, 2023)

Materials

All the apparatus used in this experiment were thoroughly washed with distilled water and dried before used. The entire chemicals used were of analytical grade and are as follows, Acetic acid (C₂H₄O₂) 60% Pure chems, Zinc oxide (ZnO) 99.9% pure, Hydrochloric acid (HCl) 37%, Sodium hydroxide (NaOH) Pure chems, distilled water and methyl orange powder Numex chemical production India.

Methodology

Chitosan was purchased from Sigma Aldrich Company with the DD of 90% and analysed by FTIR analysis where the major peaks representing functional groups such as N-H stretching of amine and O-H stretching of alkanol with wave number of 3347cm^{-1} and 3291cm^{-1} were detected respectively

Synthesis of Chitosan-ZnO Composite

1g of chitosan was mixed with 1g of ZnO and dissolved in 100ml of acetic acid and heated in a water bath at ($75\text{ }^{\circ}\text{C}$ - $80\text{ }^{\circ}\text{C}$). The composite was then filtered, washed with distilled water and dried in oven at $50\text{ }^{\circ}\text{C}$ for 1hour

Adsorption process for Methyl Orange dye

0.2, 0.4, 0.6, 0.8g of the composite was mixed with 50ml of 1000ppm methyl orange colorant and stirred using a magnetic stirrer at different time intervals of 15min, 25min, 35min and 45min under normal room temperature.

RESULTS AND DISSCUSION

FTIR analysis on both chitosan and chitosan-ZnO composite

The FTIR spectra of chitosan in table 1 and Fig. 2, revealed the presence of N-H stretching peak at 3347cm^{-1} , indicating a free N-H group, whereas in the spectra of chitosan-ZnO composite in Fig 3, the N-H stretching peak was found to be absent. This disparity suggested that the N-H group in the chitosan remains uncoordinated and free. In contrast, the absence of the N-H group peak in the chitosan-ZnO composite indicated the possibility of a coordinate bond formation with oxygen as a result of which the N-H stretching peak is no longer observable in the composite, indicating the loss of its free state. The sign of peaks above 400cm^{-1} in the composite spectra revealed the possibility of having Zn-O bond. This is in accordance with Doondoni et al, (2024) who also got similar peaks with the FTIR result of the chitosan- ZnO composite

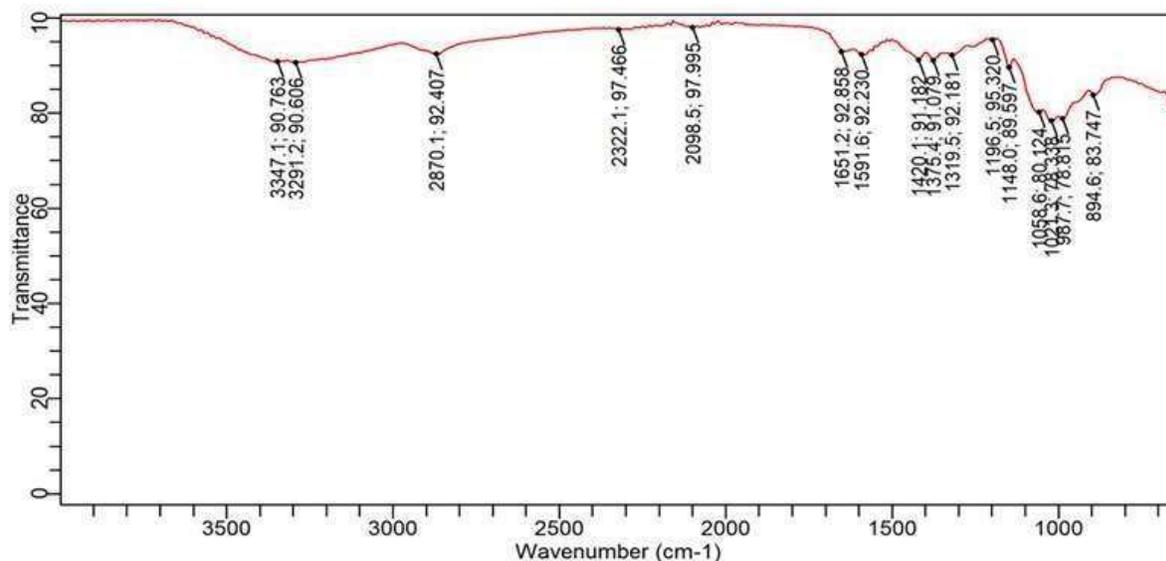


Fig. 2: FTIR Spectra on Chitosan

Table 1: Interpretation of FTIR Spectra on chitosan

WAVE NUMBER	FUNCTIONAL GROUP	STATUS
3347	N-H Stretching	Pri./Sec. Amines
3291	O-H Stretching	Alkanol
2870	C-H Stretching	Alkane
1651	N-H Bending	Amines
1420	C-C Stretching	Ring
1058	C-N Stretching	Aliphatic amine
894	N-H Wagging	Pri./Sec. Amines

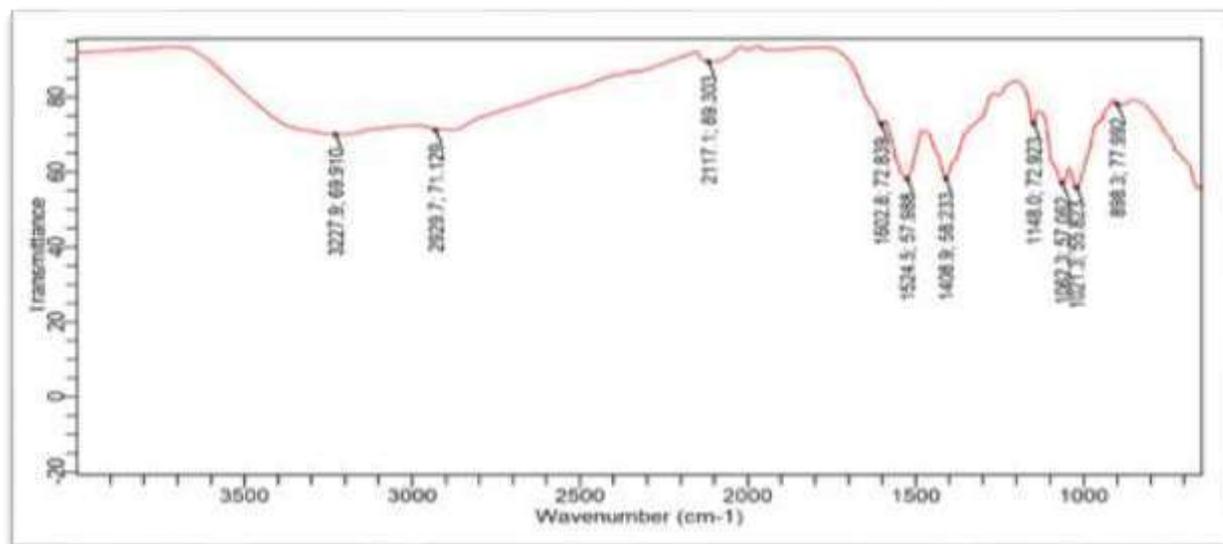


Fig.3: Chitosan-ZnO composite FTIR Spectra

Adsorption Study

The adsorption study experiments were conducted by varying the adsorbent dosage ranging from 0.2g, 0.4g, 0.6g to 0.8g of the prepared composites and keeping other experimental conditions constant. The maximum adsorption is observed at 0.6g of the composite as presented in Figure 4. From the result obtained; it simply showed that; the higher the dosages, the higher the

absorbance due to the increase of the active sites up to the optimum dosage of 0.6g of the composite. This is in accordance with Kyohairwe *et al.*, 2023, where he described the increase in the adsorption capacity of chitosan composites using higher dosages insufficient surface area affects dosages lower than 0.6g while there is a possibility of agglomeration of particles at higher dosages than 0.6g there

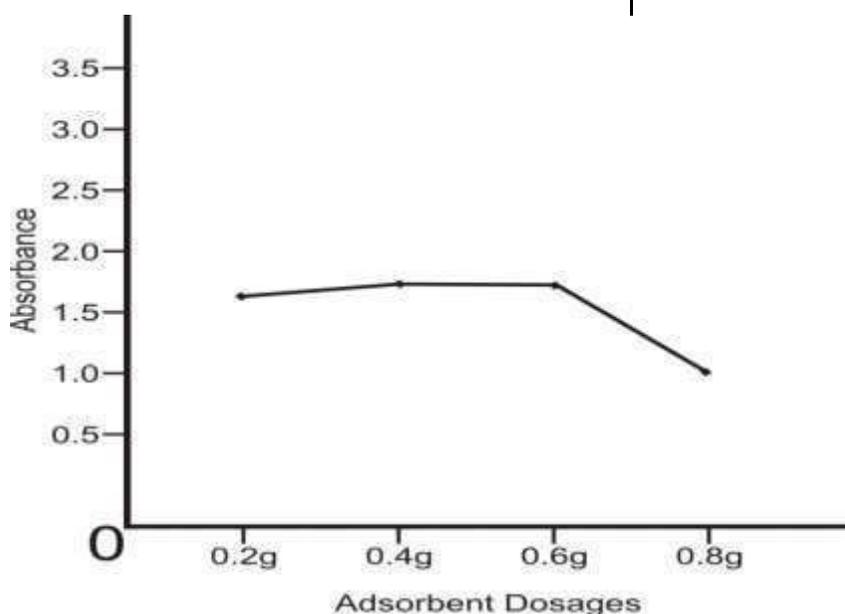


Fig. 4 Absorbance against adsorbent dosage

According to the data presented in Fig.5, a notable trend emerged; as time progresses, absorbance exhibited a consistent decrease. However, a deviation from this trend was observed at the final highest time (45m),

where a slight increase in absorbance was recorded. This described that there was an optimum time within which the adsorption follows linearity after which it changed

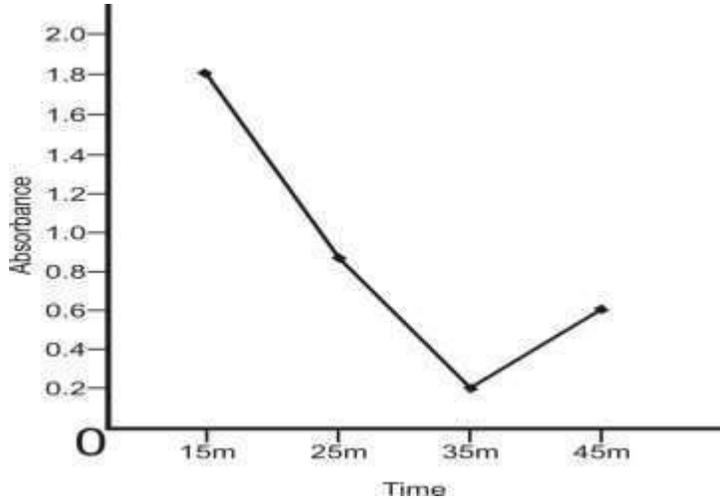


Fig. 5 Absorbance against time at the composite dosage of 0.2g

According to the data presented in Fig 6, there was no actual pattern for absorption because as the time increased,

absorbance was in dwindling pattern. This was possibly due to insufficient mixing

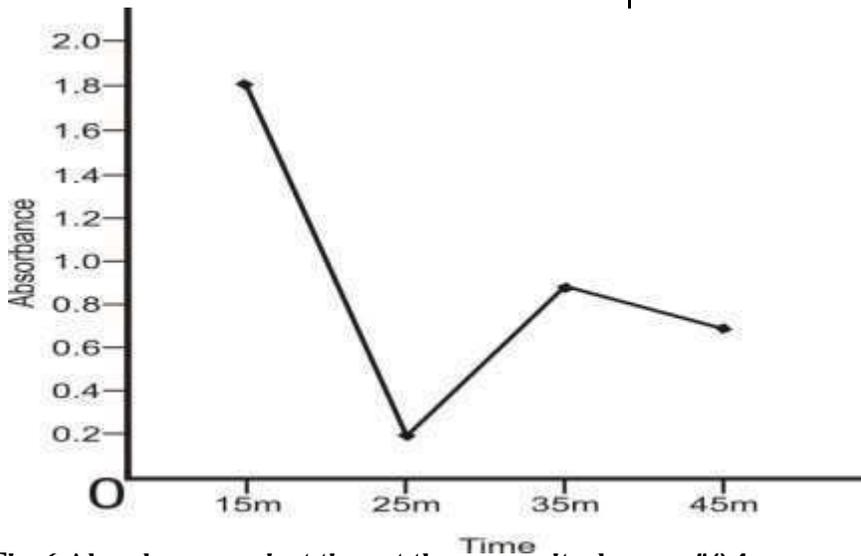


Fig. 6 Absorbance against time at the composite dosage of 0.4g

According to the data presented in Fig 7, there was no actual pattern for absorption because as the time increases, the absorbance followed a Zigzag pattern with

no direct pattern. This was probably due to the low surface area of the composite at the dosage of 0.4g and insufficient mixing

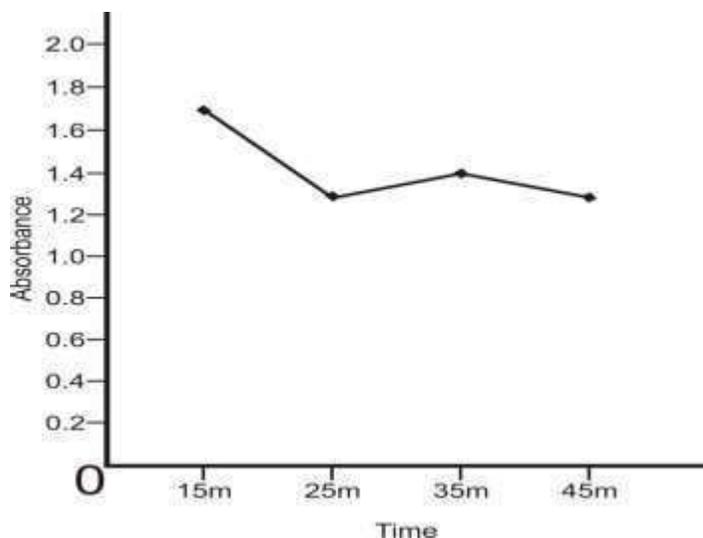


Fig. 7 Absorbance against time at the dosage of 0.6g

From the data presented in Fig.8, the adsorbent dosage of 0.8g with the variation of time from 15 minutes to 45 minutes followed a constant trend; with no increase

in the absorbance as time progressed. This was due to the fact that at this dosage, the adsorption had nothing to do with variation of time because of agglomeration

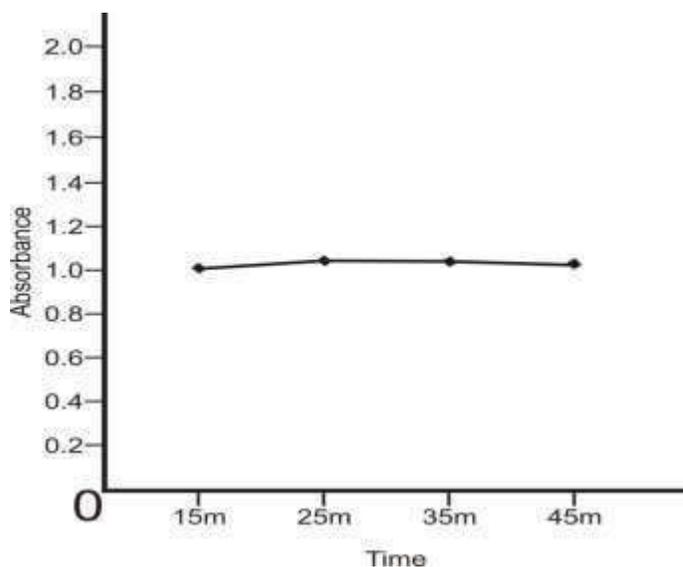


Fig. 8 Absorbance against time at the dosage of 0.8g

CONCLUSION

The synthesized chitosan-ZnO composite demonstrated good potential as an adsorbent for the removal of methyl orange colorant

from aqueous solutions. The combination of chitosan and ZnO composite resulted in improved adsorption capacity due to the number of adsorption sites of the composite

materials rather than using a single material. Variation in time and adsorbent dosage also played a significant role in revealing the adsorption capacity of the composite

RECOMMENDATIONS

The study recommends the following:

- Other parameters like revolution per minute (rpm) and temperature should

also be varied in order to see their effects in the adsorption rate

- Kinetics as well as adsorption isotherms studies should also be done to study the rate of the reaction and the surface interaction of the adsorbent and colorants
- The reusability of the adsorbents should also be tested

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Parental Awareness as Consenting Agent of Premarital Medical Screening of Intending Couples in Katsina State, Nigeria

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Abstract

This study investigated parental awareness as consenting agent of premarital medical screening of intending couples in Katsina State. To achieve the purpose of the study, one research questions and one hypothesis were formulated to guide the study. Descriptive research design of survey type was used for the study. The population of the study consisted of 1,672,426, parents. A sample of 450 respondents was selected using multi-stage sampling techniques. The instruments used for data collections was a researcher developed questionnaire. It was validated by five experts in the Department of Human Kinetics and Health Education, Bayero University Kano. It was exposed to a reliability test and $r=0.75$ was obtained. Questionnaires from 408 respondents were retrieved and analyzed using descriptive statistics of frequency counts and percentages to describe the demographic information, inferential statistics of chi square was used to test the formulated hypothesis at 0.05 levels of significance. The result of the study revealed that there is significant parental awareness as consenting agent of premarital medical screening ($\chi^2 = 335.539$, $p < 0.05$). It was therefore, recommended among others, that parents should continue been enlightened through health education on the benefits of premarital medical screening so as to improve consent and also to identify the potential risks of lack fo consent

Keywords: Awareness, Consenting, Agent, Premarital, Screening

Introduction

Premarital medical screening is a test in which couple that are planning to get married are tested for genetic infections and other blood transmitted diseases to prevent transmitting any diseases to their children (Rahman & Khatun, 2014). Premarital medical screening is preventive services which are integral parts of maternal and child health programmes in many parts of the world (Fahad & Sarah, 2009). Premarital medical screening is a group of tests recommended for couples that are going to get married, to prevent as much as possible transmitting disease to themselves and their offspring; This test includes genetic, infectious and

blood transmitted diseases. Even though, premarital medical screening varies from one region to another depending on the prevalence of the diseases in the particular state or region (Freiburg 2020). Furthermore, premarital medical screening is described as the crucial health assessment of intended couples or any other individual in which people get tested against infectious and transmissible diseases thereby preventing the spread of any disease to each other and children, (Suburban, 2016). Moreover, premarital medical screening is the most vital tool that aims at limiting the spread and control of diseases such as sickle cell anemia,

hepatitis B, and HIV/AIDs through creating awareness about the concept of comprehensive healthy marriage and to avoid social and psychological problems for families whose children suffers from such preventable diseases.

Premarital medical screening is one of the most important strategies for prevention of genetic disorder, congenital anomalies and several medical, psychological and marital problems (Alsulaiman, 2018). This is also the most appropriate procedure as it is generally acceptable from the religious and ethnical point of view as well as for its minimal health and economic requirements (El Hamzi, 2006). Premarital Medical screening is however, the examination of individual with no signs of a disease in order to detect those at risk of having or developing a disease, its purpose is to identify the disease early for better interventions and management (Mohamed, 2012). Similarly, premarital medical screenings are group of test recommended for couples that are planning to get married to prevent as much as possible transmitting disease to their offspring such as genetic, infectious and blood transmitting disease (Freiburg, 2021).

According to the World Health Organization (2006), premarital medical screening involves method of preventing genetic diseases which includes genetic counseling, prenatal diagnosis, and preconception diagnosis. To reduces these problems and their impact on social, emotional, psychological and cost dimensions of the family and the health system. It is essential to practice premarital medical screening as it was successful in some Western and Arab countries.

Nigeria remain the top country with high rate of individual with genetic disease or disorders as a result of poor consent of premarital screening and inadequate educational programmes to sensitized parent on the importance of premarital medical screening (Mebayoje, 1996). The increased problems of inheritable genetic disorder among children born with abnormalities remain a top government concern and agenda as stated by Mustapha (2018), He stated that genetic disorder is characterized by high morbidity and mortality with 50 percent of patients dying within the first 10years of their lives, which is caused by inadequate awareness and consent of premarital medical screening. Thus, this leads to a lot of the incidence of hereditary disease with a lot of negative impact on child health status and overall development (Mayor Clinic, 2017). Katsina State has 17000 children suffering from hereditary disease specifically sickle cell anemia, the worst incidence in the 36 states of Nigeria (Katsina State Ministry of Health, 2014).

According to Waleed, (2011), premarital medical screening consent serves as preventive measure of health disorder and to tend to promote economic, social and emotional wellbeing of parents, families, communities as well as government itself. Research shows that consent of PMS was extremely scarce in Africa due to the awareness level, attitude and cultural background of the population. Thus, this led to high rate of wide spread of hereditary and sexually transmitted diseases/infection. (WHO, 2006). Nigeria account for 50% of sickle cell disease birth worldwide about 2.3% of her population suffers from Sickle Cell Disease with 25% of

Nigeria being healthy carriers. Study shows that 80% of youth had awareness and 65% practice PMS in Yaba, Nigeria. (Gabriel & Matthew, 2006).

WHO (1983), revealed that consent of parents toward PMS remain the major concern in African as a result of literacy level, cultural heritage of the population. These attitudes led to the increase in the wide spread of hereditary and sexually transmitted diseases or infections among couples or parents and children.

According to Danjuma, (2016), Nigeria rank first among the countries that are suffering from these problems of hereditary and sexually diseases as a result of poor awareness and consent of PMS, though intervention by State government, Stakeholders are yielding result due to the massive campaigns and awareness to reduce the incidence. In a study conducted among university students on parent awareness about PMS found the majority of the respondent (63.6%) knew the benefit of PMS but attitude and consent was very poor and perhaps, neglected (WHO, 2006).

WHO, (1983), suggested measures to end genetic and sexually diseases transmission which includes Health Education to improve community awareness about PMS and consent. This strategy was adopted by many state in Nigeria where Health knowledge and health education campaigns and programmes on PMS where organize periodically improve consent

In Katsina State, the consent is lacking due to the level of awareness, attitude, cultural background,

this is because the state ranked first in Northern Nigeria as regard to hereditary diseases as estimated to have more than 17000 children affected with these conditions (State Ministry of Health, 2014). Mustapha, (2018) in his statement confirmed the incidence as he explained that the mortality and morbidity is too high with 50% of patient dying within the age of 10 years. He further stressed that a lot of intervention and massive campaigns to educate citizens of the state on the benefit of PMS consent before and after marriage.

Statement of the Problem

Awareness of premarital medical screening (PMS) of the parents is very paramount as it serves as preventive measures of health disorders that are associated with blood disease and tend to promote and enhance economic, social and emotional well-being of parents. Thus, it is believed that couples who undergo PMS before marriage avoid the risk of any genetic or transmitted disease to themselves and their children. However, awareness of PMS among parent is the most vital tool that aims at limiting the spread of genetic and any other blood problem (WHO 2006). Awareness of premarital medical screening among parent of intending couples in Katsina State is extremely essential as it will promote parental consent for couples to undergo premarital medical screening in the State and this will help in promoting healthy families and also prevent on necessary pressure over health institution, blood banks, family, community as it aimed at reducing the number of children born with inheritable diseases.

As a result of non - awareness of PMS in Katsina State children living with hereditary and sexual diseases in Katsina tend to suffer extensive health problems in life such as social, medical, emotional, physical and psychological challenges.

Katsina State is one of the states with the highest incidence of hereditary disorders or disease with 17,000 children suffering from sickle cell anemia (Ministry of Health 2014). Personal observation of the researcher and his experience as a campaigner of premarital medical screening in Katsina State Public Health Enlightenment Organization showed that children's ability to achieve their full potentials is affected by these problems of hereditary and sexual transmitted diseases, a product of failure to undergo premarital medical screening which also limit the social, emotional and economic well-being of the parents. It is based on this context; the researcher investigated parental awareness as consenting agent of premarital medical screening of intending couples in Katsina State.

Research Question

The following research question was formulated to guide the conduct of the study:

1. Do parents as consenting agent aware of premarital medical screening for intending couples in Katsina state?

Hypothesis

The following hypothesis was formulated and guided the conduct of the study;

1. There is no significant parental awareness as consenting agent of premarital medical screening for intending couples in Katsina state.

Purpose of the study

This study investigated parental awareness as consenting agent of premarital medical screening for intending couples in Katsina State. Thus, aimed at minimizing the spread of hereditary, STDs and STIs and other related diseases among couples or spouse and their children in Katsina State.

Methodology

A descriptive design of the survey type was adopted for this study. The population of the study comprise of the entire parents in the three (3) senatorial zones of Katsina state, with a population of 2, 825,677. Multistage sampling technique consisting of stratified, simple random, purposive, proportionate and systematic sampling techniques were used to select four hundred and fifty (450) parents from households in Katsina but only four hundred and eight (408) questionnaire were dully filled and used for this study. A researcher developed questionnaire on parental awareness as consenting agent of premarital medical screening of intending couples in katsina state (PACAPMSICKS). The questionnaire was divided into two (2) sections, A - B. Section A sought demographic information of the respondents, while Section B contain items on parental awareness as consenting agent of vpremarital medical screening of intending couples. Four (4) points modified Likert format rating scale was used for response options in section B, with option of Strongly Agree (SA) -4 points, Agree (A)-3 points, Disagree (DA) -2 points and Strongly Disagree (SD) - 1 point. In order to ascertain the validity of the instrument used, five copies of the questionnaire were given to five

lecturers in the department of human kinetics and health education, faculty of education Bayero University Kano, for contents validity. A split half reliability method was employed to test the reliability of the questionnaire where the test items were split into two (2) by separating the items into even and odd numbers. The results of the two halves were compared by subjecting them to Spearman-Brown prediction formula to determine its coefficient correlation and a reliability index of $r = 0.75$ was obtained before the instrument was used for this study. The administration of the instrument

was done by the researcher and three (3) trained research assistance who helped in the distribution and retrieval of the questionnaire, but only four hundred and eight (408) questionnaires were fully filled and used in this study.

Data analysis: Descriptive statistics of frequency count and percentage was used to describe demographic information of the respondents and Chi square analysis was used to test the formulated hypotheses at 0.05 level of confidence.

Results

The results of the study are presented as follows

Table 1: Demographic information of the respondents

Variable	Frequency	Percentage
Age		
30-40 years old	263	64.5%
41-50 years old	91	22.3%
51-60 years old	36	8.8%
61-above years and above	18	4.4%
Parents		
Male	254	62.3%
Female	114	27.9%
Guardians	40	9.8%
Total	408	100%

Table 1: Is on demographic information of the respondents. The table revealed that respondents with ages between 30-40 years were 263 (64.5%), age 41-50 were 91 (22.3%), ages 51-60 were 36 (8.8%) age of 61 and above were 18(4.4%). This means that majority of the participants were between the age of 30 - 40years. The respondents that are male parents were 254(62.3%),

female parents were 114(27.9%) and guardian were 40 (9.8%).This means that majority of the participants were male parents.

Hypothesis: There is no significant parental awareness as consenting agent of premarital medical screening for intending couples in Katsina state.

Table 2: χ^2 Summary on parental Consent of Premarital Medical Screening

	FO	FE	χ^2	df	P
Agree	19	204	335.539	1	.001
Disagree	389				
Total	408				

Tab = χ^2 335.539, df 1 p<0.05

Table 2: shows that χ^2 value of 335.539 at df 1, p<0.05. This indicated that, there is significant parental awareness as consenting agent of premarital medical screening for intending couples in Katsina state. Therefore, the null hypothesis stated is hereby rejected. This means that parents are aware of the importance of their consent in premarital medical screening of intending couples in Katsina state. It is however surprising from the problems noted in Katsina state with more hereditary diseases this simply means that the parental awareness is not transcending to acceptance and practicing of premarital medical screening.

Discussion of Findings

The finding of this study revealed that there is significant parental awareness as consenting agent of premarital medical screening of intending couples in Katsina State, which is in line with the study of Oludare and Ogili, (2013), who reported that most parent believe that, the premarital medical screening is the only means of preventing transmission by both parents to their offspring. This high rate of awareness is attributed to the fact that majority of the parent have access to mass media, health facilities and friends which have been reported as the major means of disseminating the information about

hereditary disease STDs and STIs.

The result of the study further confirmed the finding of Omar, Alfarsi, Ishita, Allal, Khalil and-Al-Adawi, (2014), who conducted a study on awareness, attitude and practice ofPMS among adult attending (PHC) centers in Oman, that parent were aware of (PMS) which has perhaps reflected in high literacy among majority of the respondents. This finding is similar to a study conducted in Saudi Arabia by El-hamzi, (2006). which showed that (93.3%) of the population studied, expressed awareness of (PMS) and is used as a tool of preventing genetic disease The result is in line with a study conducted by Omar, (2014), who reported that (PMS), practice are encourage through media campaigns, public enlightenment, health education and family consent. The outcome of this study is in line with Ghufuran, Alaaeddeen and Nasheet (2018), who conducted a study on the awareness, attitude and practice of premarital medical screening among women visiting health care centers in Bahrain. The result showed that (65%) are aware of PMS. This indicates that parents have awareness of premarital medical screening.

However, the findings of this study is contrary with the findings of Abdal-Rashid, (2009), and that of Suberu, et al, (2016), that shows awareness but insufficient consent of PMS, the finding of this study also contradict the study of Al-meer, Assel, Al- uwari and Ismail (2011), which indicated that there is low level of awareness due to the poor program on premarital medical screening, inefficient mass-media campaigns and cultural practice. Similarly in a study conducted by Abdullahi, Ahmad, Alrahman and Zaid (2015), on awareness of premarital medical screening in Riyad Saudi Arabia which indicated inadequate awareness as reported in the findings. the study of Ghufraan and Nasheet, (2018), stated that despite the high level of awareness there is still low level of parental consent as reported in their study which shows (40%) consent. Similarly, WHO (2006), confirmed on the poor parental consent of premarital medical screening despite high level of awareness by the individual. However, in a study conducted by Abdal-Rashid (2009) indicates low level of consent of premarital medical screening which is reaffirmed by Suberu et. al. (2016).

Conclusion

Based on the finding of this study, the following conclusion was drawn.

- (1) There is a proper consenting agent of premarital medical screening among parents for intending couples in Katsina State.
- (2) Parents should be continued enlightened through health education on the benefits of

premarital medical screening so as to improve consent and also to identify the potential risks of lack of consent.

Recommendations

Based on the finding of this study, the following recommendations were made:

- (1) Government and non-governmental organization as well as religious leaders should make facilities and personnel available and accessible for every intending couple in order to utilize the services.
- (2) Parents should be supported with up to-date information on premarital medical screening as this will help in strengthening awareness as consenting agent of premarital medical screening among intending couples in katsina state.

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Artificial Intelligence and Automation in Nigerian Libraries: Opportunities and Challenges for Service Delivery

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Abstract

The integration of Artificial Intelligence (AI) and Automation in Nigerian libraries presents both significant opportunities and challenges in enhancing service delivery and operation efficiency. This research explores the potential impact of AI and automation technologies on transformation of library services in Nigeria. It examines how AI can be utilized in various library functions, such as automated cataloging, personalized user recommendations, and virtual reference services. Additionally, the study highlights the challenges faced by Nigerian libraries in adopting these technologies, including infrastructural limitations, funding constraints, and the need for staff training. Through a combination of literature review and cased studies, this research provides insights into how AI and automation could improve access to information, streamline administrative tasks, and enhance the user experience in Nigerian libraries. The findings suggest that while there are barriers to the wide spread implementation of these technologies, there are also emerging opportunities for libraries to innovate and serve their communities more effectively in the digital age. Recommendations are provided for policymakers, library administrators and technology providers on how to support the adoption and integration of AI and automation in Nigerian libraries.

Keywords: Artificial Intelligence, Automation, AI in Libraries, Library Services, Service Delivery

Introduction

The integration of Artificial Intelligence (AI) and automation technologies has revolutionized various sectors globally, and libraries are no exception. In Nigeria, the adoption of these technologies presents a significant opportunity to enhance library services, making them more efficient and user-centric. However, this transition also brings forth a unique set of challenges that need to be addressed to fully harness the potential of AI and automation in the Nigerian library context. Nigerian libraries, encompassing public, academic, and special libraries, have traditionally relied on manual processes for cataloging, information retrieval, and user services. With the advent of digital

technologies, there is a pressing need to modernize these processes to meet the evolving demands of users. AI and automation offer promising solutions, such as intelligent cataloging systems, automated circulation, and personalized user experiences. However, the implementation of these technologies requires careful consideration of Nigeria's unique infrastructural, financial, and cultural landscape. Adebayo et al (2023) noted that, AI technologies have become globally recognized as indispensable tools for improving organizational efficiency and productivity. Suffice therefore to say that AI technologies have strongly influenced the world of work in the 21st century. In the library setting, the

adoption of AI can improve library services and provides access to accurate information that can drive growth and development in this information age. Artificial intelligence technologies are now being used in libraries to achieve the organic integration of readers and libraries.

Despite the potential benefits of technology integration and library automation, Nigerian libraries face significant challenges in adopting AI and automation. These challenges include inadequate technological infrastructure, limited financial resources, a shortage of skilled personnel, and resistance to change among stakeholders. Addressing these issues is crucial for the successful integration of AI and automation into library services. The primary objectives of this paper are to: This paper focuses on the application of AI and automation within Nigerian libraries, examining both the potential benefits and the obstacles to their adoption. It covers aspects such as technological infrastructure, financial investment, skill development, and organizational readiness. The paper also provides recommendations tailored to the Nigerian context, aiming to guide policymakers, library administrators, and other stakeholders in fostering a conducive environment for technological advancement in library services. The aim is for the paper to contribute to the discourse on digital transformation in Nigerian libraries, providing insights and practical solutions for the effective adoption of AI and automation technologies with particular reference to libraries in Nigerian society.

Literature perspectives

Artificial Intelligence (AI) and automation have become pivotal in transforming library services globally, offering enhancements in efficiency, user engagement, and resource management. In the context of Nigerian libraries, the integration of AI presents both significant opportunities and notable challenges. This literature review synthesizes existing research on AI adoption in Nigerian libraries, highlighting global perspectives, regional applications, and the unique considerations within the Nigerian milieu. Globally, AI has been instrumental in revolutionizing library operations. AI technologies such as machine learning, natural language processing, and robotics have been applied to automate cataloging, enhance information retrieval, and personalize user experiences. These advancements have led to improved operational efficiency and user satisfaction across various library settings.

In Nigeria, the exploration of AI in library services is gaining momentum. Several studies have examined the readiness, requirements, and challenges associated with AI integration in Nigerian libraries. For instance, Igbo et al. (2025) identify essential prerequisites for implementing AI in academic libraries, including policy frameworks, digital infrastructure, human capital development, and data security measures. They also highlight challenges such as high costs, technical skill shortages, and unreliable power supply. Similarly, Ajani et al. (2023) assess the readiness of Nigerian public libraries to adopt robotic technology, emphasizing the potential

of robots to transform library services by handling tasks like book organization and user assistance. However, they noted challenges including inadequate technological infrastructure, funding constraints, and the necessity for specialized training as the major anticipated challenges in this regard Idemudia and Makinde (2022) analyzes the prospects and challenges of AI in Nigerian academic libraries, highlighting areas such as acquisition, cataloging, and indexing where AI can be integrated. They acknowledge the potential of AI to revolutionize service delivery but caution about barriers like infrastructural deficiencies and resistance to technological change. Bello and Abdulsalam (2023) discuss steps to improve library services through AI in Nigerian libraries, emphasizing the importance of policy development, adequate funding, and employment of AI experts. They identify factors affecting AI utilization, including funding limitations, maintenance challenges, and lack of expertise, and propose strategies to mitigate these issues. Suleiman et al. (2024) examine the ethical considerations and potential benefits of leveraging AI for library services in Nigerian universities. They address concerns such as data privacy, intellectual property, and algorithmic bias, advocating for a robust ethical framework to guide AI implementation in library settings.

The integration of AI in Nigerian library services was explored by Ibrahim and Okpala (2024) focusing on AI's roles in enhancing information retrieval, automating routine tasks, and personalizing user experiences. The

writers discussed the benefits of AI in cataloguing and classification processes and user engagement, while also addressing challenges related to data quality and the need for digital literacy among staff. Furthermore, Adewojo et al. (2024) explore the role of AI in enhancing user experience and efficiency in Nigerian knowledge repositories. They highlighted how AI can streamline administrative tasks, optimize search algorithms, and improve user engagement, while also proposing strategic approaches for successful AI integration.

The integration of AI and automation in Nigerian libraries offers promising avenues for enhancing service delivery, operational efficiency, and user engagement. However, the successful adoption of these technologies is contingent upon addressing challenges such as infrastructural limitation, financial constraints, skill shortages, and ethical considerations. A concerted effort from all stakeholders, including government bodies, educational institutions, and library professionals, is essential to harness the full potential of AI in transforming Nigerian library services. This paper is of the view that, Artificial Intelligence (AI) presents significant opportunities for transforming library services in Nigeria. However, its adoption has been relatively limited, primarily due to factors such as inadequate technological infrastructure, financial constraints, and a lack of awareness among library professionals. To leverage AI's potential, Nigerian academic libraries should consider implementing technologies like chatbots, RFID systems, and robotics, and invest in training staff to effectively utilize

these tools. Collaborations with technology providers and government agencies could also enhance the technological infrastructure necessary for AI integration

Opportunities of AI and Automation in Nigerian Libraries

The integration of Artificial Intelligence (AI) and automation in Nigerian libraries presents transformative opportunities to enhance service delivery, streamline operations, and improve user engagement. Below are key areas where AI and automation can significantly impact Nigerian libraries:

AI-Driven Chatbots: Implementing AI-powered chatbots can revolutionize user interactions by providing immediate assistance, answering research inquiries, and guiding users to relevant resources. This technology ensures continuous support, enhancing user satisfaction and engagement (Okoro, 2022)

Personalized User Experiences: AI algorithms can analyze user behavior and preferences to offer personalized content recommendations, tailored search results, and customized learning experiences, thereby increasing user engagement and satisfaction (Chigbu, & Eze 2023).

In addition, AI can effectively influence **Operational Efficiency** for library service delivery. In this way library can effectively use its resources (people, technology, space, time, and money) to deliver effective, timely, and quality services to its users — with minimal waste or duplication of effort.

AI-powered analytics tools can process usage data, circulation trends, and user behavior to inform collection development strategies,

Predict high-demand periods or materials and Optimize staff scheduling and resource allocation.

Providing efficient Resource Management and Automation of Routine Tasks. Routine operations like circulation, inventory control, book renewals, and overdue notifications can be automated using systems like:

- i. Integrated Library Management Systems (ILMS)
- ii. RFID technology for self-check-in/out
- iii. Automated stock verification tools

Challenges in Implementing AI and Automation

Implementing Artificial Intelligence (AI) and automation in Nigerian libraries offers promising enhancements to service delivery and operational efficiency. However, several challenges impede the seamless integration of these technologies. Addressing these challenges is crucial for the successful adoption and utilization of AI in Nigerian libraries. Writers like Okonkwo, (2023), Nwafor, (2023), Lawal, (2024) identified a number of challenges in implementing AI and automation for service delivery in libraries. The challenges includes but not limited to: **Finacial Constaint**

The high costs associated with establishing AI systems pose significant barriers for Nigerian libraries. Limited budgets hinder the procurement of necessary hardware, software, and ongoing maintenance services. This financial limitation affects the libraries' ability to adopt and sustain AI technologies effectively.

Insufficient Technology Infrastructure

Many libraries in Nigeria struggle with inadequate technological infrastructure, including unreliable internet connectivity and outdated hardware. These shortcomings impede the implementation of AI solutions that require stable and robust technological environments.

3. The successful deployment of AI in libraries necessitates personnel with specialized skills in AI and machine learning. However, there is a scarcity of trained staff capable of managing and operating AI systems, leading to challenges in both implementation and maintenance.

Resistance to Change

Introducing AI technologies may encounter resistance from library staff and users accustomed to traditional systems. Concerns about job displacement and unfamiliarity with new technologies can hinder acceptance and integration efforts.

5. Ethical and Privacy Concern

The adoption of AI raises ethical issues, particularly regarding data privacy and protection. Libraries must navigate these concerns to maintain user trust and comply with legal standards, necessitating the development of clear policies and guidelines.

Power Supply Issues

Ensuring the longevity and effectiveness of AI systems requires regular maintenance and updates. However, limited technical expertise and financial resources can lead to inadequate maintenance, resulting in system downtimes and reduced functionality.

8. Cultural attitudes and behavioural barriers

towards technology or the lack of awareness about AI's benefits can impede its adoption. Educational initiatives are essential to inform stakeholders about the advantages of AI in enhancing library services.

Strategies for overcoming challenges please

Overcoming these challenges requires a collaborative effort among library management, government bodies, and technology partners. Strategic investments in infrastructure, comprehensive training programs, and policies that address ethical and cultural concerns are essential steps toward successful AI integration in Nigerian libraries. By proactively addressing these issues, libraries can harness the transformative potential of AI to better serve their communities. Below are key strategies to address these challenges:

1. **Financial Constraints Collaborative Funding Initiatives** for addressing financial constraints: Libraries should seek partnerships with government agencies, private sector entities, and international organizations to secure funding for AI projects. Joint ventures can pool resources, making AI implementation more financially feasible.
2. **Phased Implementation Approach:** Adopting a step-by-step approach allows libraries to spread costs over time, starting with pilot projects that demonstrate AI's value before scaling up.
3. **Addressing Insufficient Technological Infrastructure through Infrastructure Upgrades:** Investing in reliable internet connectivity, modern hardware, and robust Software is essential. Libraries should

prioritize these upgrades to create a conducive environment for AI applications.

4. **Public-Private Partnerships:** Collaborating with technology providers can facilitate access to necessary infrastructure at reduced costs, ensuring that libraries are equipped to support AI technologies.
5. **Comprehensive Training Programs:** Implementing continuous professional development initiatives is crucial. Training librarians in AI concepts and applications will build the necessary expertise for effective implementation and management.
6. **Recruitment of Specialists:** Hiring professionals with expertise in AI and related fields can supplement existing staff skills, ensuring that libraries have the necessary human resources to manage AI systems effectively.
7. **Stakeholder Engagement:** Involving all stakeholders, including staff and users, in the planning and implementation phases fosters a sense of ownership and reduces resistance. Regular workshops and feedback sessions can address concerns and build support for AI initiatives.
8. **Establishing Clear Policies:** Developing comprehensive guidelines on data privacy, security, and ethical AI use ensures that libraries adhere to legal and ethical standards, maintaining user trust. In addition, **Investment in Alternative Energy Sources:** Installing backup power solutions, such as generators or solar panels, can mitigate the impact of unreliable electricity, ensuring uninterrupted AI system operations. Training local staff to handle routine maintenance tasks reduces

dependence on external vendors and enhances sustainability. And, engaging with the community through awareness campaigns and educational programs can build trust and familiarity with AI technologies, reducing apprehension.

Conclusion and Recommendations

This paper would like to conclude with some series of questions raised by Enakrire and Oladokun (2024) on how prepared are the librarians if they were to consider AI as enabler of future library services today? What would be the perception of librarians towards AI being enablers of future library services? Will the infusing of AI into future library services not serve as a restraint to librarians' loss of jobs? Have librarians upgraded their technological skills for the operations of AI? Will phobia in adaptation not deter a librarian's preparedness to embrace its application? These, among others, were the enabling factors towards consideration of AI as tools for future library services. Answer to these questions would help librarians and other stakeholders to addressing the opportunities and challenges of AI adoption and use for library services in Nigerian university libraries.

Integrating Artificial Intelligence (AI) and automation into Nigerian libraries presents transformative opportunities to enhance service delivery, operational efficiency, and user engagement. However, realizing these benefits necessitates addressing specific challenges inherent to the Nigerian context. The adoption of AI in Nigerian libraries holds significant promise for modernizing library services, improving user experiences, and

optimizing operational processes. Nonetheless, the successful implementation of AI technologies is contingent upon overcoming challenges such as financial constraints, inadequate technological infrastructure, and resistance to change. Addressing these issues requires a concerted effort from all stakeholders, including government bodies, educational institutions, and private sector partners. Consequently, the paper recommends the followings:

1. Infrastructure Development:

- **Enhance Technological Infrastructure:** Invest in upgrading internet connectivity, hardware, and software to create a robust foundation for AI applications.
- **Establish Reliable Power Supply:** Implement alternative energy solutions, such as solar power, to mitigate the impact of power outages on AI system operations.

2. Professional Development:

- **Conduct Comprehensive Training:** Offer workshops and seminars to equip library staff with the necessary skills to operate and manage AI technologies effectively.
- **Promote Continuous Learning:** Encourage staff to pursue further education and certifications in AI and related fields to build in-house expertise.

3. Financial Investment:

- **Secure Funding:** Lobby for increased budgetary allocations from government and institutional bodies to support AI projects in libraries.
- **Explore Funding Partnerships:** Collaborate with private sector entities and

international organizations to access additional financial resources for AI initiatives.

4. Stakeholder Engagement:

- **Involve All Stakeholders:** Engage library staff, users, and other stakeholders in the planning and implementation phases of AI projects to ensure alignment with user needs and expectations.
- **Address Ethical Concerns:** Develop policies to address data privacy, security, and ethical use of AI to build trust and ensure responsible implementation.

5. Strategic Planning:

- **Implement Phased Integration:** Adopt a gradual approach to AI adoption, starting with pilot projects to demonstrate value before full-scale implementation.
 - **Monitor and Evaluate:** Establish mechanisms for continuous assessment of AI stems to ensure they meet desired objectives and adapt to evolving user needs.

By adopting these recommendations, Nigerian libraries can effectively navigate the challenges of AI implementation, harness the transformative potential of AI technologies, and significantly enhance their service delivery in the digital age.

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Unlocking Learning Opportunities and Potentials of Adults as Autonomous Learners from the Lens of Adult Education

By

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Abstract

Adult education plays a critical role in providing equitable learning opportunities and fostering personal, societal, and national development. This paper examines the nature of adult education, the characteristics of adult learners, and strategies for unlocking their learning opportunities and potential. It highlights the discipline's commitment to inclusivity, learner autonomy, and recognition of adults' accumulated life experiences. The study underscores the challenges facing adult education in Nigeria, including low retention, high dropout rates, and limited access, noting that effective facilitation, learner-centered curricula, and appropriate instructional methodologies are essential for addressing these challenges. Adult learners are conceptualized as individuals of varying ages, educational backgrounds, and social responsibilities, who actively engage in programs designed to enhance their knowledge, skills, and societal contributions. The paper advocates for the establishment of well-equipped adult education centres, continuous training and retraining of facilitators, incentive mechanisms for learners and educators, and participatory, technology-integrated curriculum development. These measures are positioned as critical for promoting educational, economic, and social development, ensuring that adult learners can fully realize their potential. The paper concludes that a responsive, inclusive, and well-resourced adult education system is indispensable for empowering adults, fostering lifelong learning, and achieving sustainable development.

Keywords: Adult Education, Adult Learners, Autonomy, Unlocking, Learning, Opportunities and Potentials.

Introduction

Adult education is a discipline that provides equitable learning opportunities for all participants, without discrimination. Learners are free to choose programmes that align with their interests, while facilitators guide and support the learning process. In this context, adult learners are accorded special recognition by both the profession and its practitioners. They are at the steering wheel of their own learning journey, possessing the autonomy to decide what to learn and how to learn it in ways that rekindle interest, restore hope, unlock opportunities, and enhance their potential. This is because where hope ends, adult education will provide it and where it begins the discipline will facilitate and promote it.

Despite its pivotal role in addressing educational challenges, adult education in Nigeria faces serious setbacks, including poor retention rates, low completion levels, and high dropout rates at various stages of the learning cycle. According to the **National Commission for Mass Literacy, Adult and Non-Formal Education (2020)**, Nigeria's adult illiteracy rate stands at 38%, representing about 62 million people. This aligns with UNESCO's (2025) report, which notes that globally, at least 754 million adults still cannot read or write, a reality that inevitably affects their day-to-day functioning.

It is widely acknowledged that adults possess a wealth of experiences, and when these

experiences are effectively harnessed and guided, they can significantly strengthen their capabilities and contributions to personal, societal, and national development. To maximize opportunities and realise their full potential, adult learners must be actively engaged in programme design, have a voice in decision-making, and contribute meaningfully to the learning process. This active involvement is key to unlocking their learning opportunities and potential. Consequently, scholars have examined adult education from diverse perspectives, each offering valuable insights into its scope and transformative power.

Adult Education

Adult education is no longer regarded as education for elderly person or relate it to literacy acquisition only. It is noted that the concept has been widely misunderstood as some people perceive it as education for those that are above the age of attending conventional school, others look at it as skill acquisition structured that only increases the capacity of an adult to be functional within the community (Amatari & Igwesi 2023). To clear the negative perceptions, it is the type of education that deals with contemporary demands of human beings ranging from health, vocation, security, counseling, recreational activities, rehabilitation, ICT, entrepreneurship, religion, lifelong learning to mention but a few, in fact, it is the broad discipline that covers and caters for human needs. It is noted that it is impossible to discuss adult education without considering technology, in contemporary period, societal

issues have forced the pace of this growth into unprecedented and sometimes uncomfortable expansion. The theorists and practitioners who have always been instrumental in moving the fields along were challenged to develop an entirely new paradigm (Parker, 2021).

Amara, Deborah and Job (2022) defined adult education as all education at all levels, all times and in all conditions of educational needs of adults regardless of their status. Emeam (2021) defined adult education as a way of continuous socializing of adults into the world of knowledge, global citizenship and survival skills in the world, the author considers it as a way of carrying adults along the path of political and economic awareness that is much needed for all round development of the citizens and the entire nation. Halilu (2021) sees adult education as training for skill and knowledge acquisition activity undertaken by adults for their personal and professional reasons, it is a discipline for all and for all times which responds to diversity of learning needs. Jamilu (2020) sees adult education as a tool for promoting unity, progress, self-reliance, individual and national development politically, socially and economically.

Therefore, the profession has diverse programmes to cater for all the aspects demanded by human and rapid global changes. This is why it categorically sees its learners with different looking glasses compare to other disciplines.

Who is an Adult?

Person is regarded as an adult in different ways

depending on society, culture or even country. In accordance with this, it is noted that the concept of adult is one of the most misunderstood and misinterpreted concepts in adult education discipline (Hanachor & Needom, 2020). In most cases adult is regarded as an adult in three ways, by maturity, responsibility and chronological way. By maturity implies a person that reach the level of puberty. This agreed with Hanachor and Needom (2020) who stated that person is consider an adult if he is physically and psychologically matured. Similarly, Alkali and Bakori (2015) posited that an adult is a person who attain the age of maturity. Chronologically, person is regarded as an adult if he attains the age of 18 to above years, at this level he can vote and be voted (Oni, 2017). By responsibility, a person with societal or responsibility of taking care of someone is regarded as an adult. Example, a girl that is married off at the age of 13 or below or a child that is taking care or providing the need of his younger one or aged parents among others. All these categories are regarded adults due to their responsibilities. This is why adult education have special regard for them and look at them differently from other disciplines.

However, some of the definitions narrow the discipline to literacy which exclude best practice that covered skill-base, health, mobilization and utilization of community resources for betterment, continuing education, digital literacy, democratic involvement, inclusiveness, personal and professional development, and continuity and sustainability. This calls for sound policy that will

address the interest and learning needs of adults, curriculum, teaching methodologies and adequate fund to cater for all the necessities.

Adult Learner from the Lens of Adult Education

Many people misunderstand it when it comes to explaining who the adult learner is, some may look at him as an old or aged person that engage in learning how to read and write. Some may say adult learner is an unemployed person who enroll into vocational programme that will equip him with employment skill. In fact, to the layman, adult learner can be attributed to anything that comes to his mind which entirely differs from professional point of view.

An adult learner is any person that enrolled into the programme designed for adults with the intention of learning something for his betterment, family or society. This is in accordance with Jamilu and Karami (2021) who opined that once a person enrolls into adult education programme, he or she is considered as learner. In accordance with this, Jamilu, (2021) stressed that in adult education, what qualifies someone to be a learner is an enrolment. Some scholars viewed an adult learner in different way as Okoye, Nworie, Ukponu and Ezugoh (2022) defined adult learner as someone that attained the age of 18 years and above, who engages in any adult education or literacy programme for his own personal and society's development. Ike-Inebdu (2021) defined adult learner as an adult involved in one way or the other in the process of education.

Furthermore, Alkali and Bakori (2015) asserts

that an adult learner is someone who is pursuing any learning package that is designed to upgrade, update, initiate or refresh himself, it may be an individual or group of individuals. Aderinoye (1997) is of the opinion that an adult learner may be the one who has once dropped out or stepped aside from the formal school system, he may be a person who has once dropped out of the first level of formal education and has reverted to illiteracy with the passage of time. Moreover, Aderinoye further stated that adult learners are considered to be those who did not have access to formal education before attaining adulthood, they also include those who drop-out prematurely from the system or those who were forced out of school system for various reasons ranging from finance, health problems or other personal issues. Oni (2015) viewed adult learners as those who are matured enough to participate in any organised adult education programme and deliberately.

However, going by these definitions and discussions so far, anyone can be an adult learner irrespective of his status, level of education, age, gender etc. the discipline is very ready for them base on their learning needs and interest. It is noted that what makes someone to be an adult learner is an enrollment in to any adult education programme (Jamilu & Karami, 2021).

Adult educationally speaking, when it comes to learner, the discipline has different looking glasses from other professions as it considers learner responsible person with the zeal of learning anything that will uplift his life. In that accordance, it is noted that adult learners are

special learners that need to be treated with care otherwise their enthusiasm will be waste (Jamilu, Samir & Ladan 2024). Adult learner has all the right in learning process, he is given ample opportunity to express himself, dominate and control the learning process. It is noted that adult education is the type of education that considers learners' autonomy in the sense that they have control over what they want to learn and how to learn, the process must be learner-centred. In line with this, Ike-Inebdu (2021) posited that adults prepare self-control and self-direction as they believe they are responsible for their lives, they are life-centred in their orientation to learning, they always confront and deal with the problems in their daily lives, therefore one could not show them what to learn than themselves. It is noted that adult learners like to have control over what is learned, how it is learned, when and where it is learned (Obinna-Akakuru, Ibe, Akakuru & Nelson-Okartar, 2021) This accords with Jamilu and Hussain (2022) who pointed out that adult learners are considered autonomous in the sense that they have their reasons for enrolment and place emphasis on their learning needs and concentrate on accomplishing these goals.

In the spirit of adult education, it is required that government, curriculum planners, educators, researchers and all other practitioners to put all hand on deck in assisting adult learners to meet their demands and overcome their challenges economically, socially, physically or psychologically. strong monitoring and evaluation units are to be established from federal

to local government this will enhance the tracking of all activities and coordination across the federation.

Characteristics of Adult Learners

As mentioned earlier, adult learners are autonomous, this is why they have their peculiarities that differentiate them from others. They are self-directed, self-control, self-concept, always want to learn things that are of the immediate benefit, more of practical than theories, have wealthy experiences. Yusuf (2022), Anyikwa (2019) and Oni (2015) pointed out some characteristics of adult learners as: Self-sponsored, self-employed, must be respected, goal-oriented, accumulated knowledge and experiences, matured physically, emotionally and mentally to make choice out of options made available to them, they are saddle with societal responsibilities in addition to personal ones, more conscious of how they are treated, independent in decision making, skeptical about imbibing new ideas among others.

In respect to adult learners, adult education tailor its programmes towards the needs of its participants, those that dropout, neo-literate, non-literate or highly educated. This is why programmes are divers ranging from higher institutes of learning to the local centres. Students are at liberty to choose their course of study and specialized on specific area, while local centres programmes are available to cater for all and ensure inclusiveness as morning, evening, afternoon and night programmes are offered. One can decide to join the one suitable for his nature

or condition to achieve education for all.

Unlocking Learning Opportunities and Potentialities of Adult Learners

For learning to be productive and unlock opportunities in adult education, all the programmes for adult learners must be well articulated and centred around their aspiration. Therefore, level of education has positive influence on people opportunities and expectancy in life, as we all believe in individual differences. Some learners have the capacity of carrying out some tasks but all they need is competent facilitator to guide them to unlock that potentialities. European Association for the Education of Adults (2019) argued that adult education supports both those who have not been able to take full advantage of initial education and those who have but want to pursue further learning as an adult. Because individual levels of education have a huge impact on people's opportunities in life, ranging from the kind of jobs they can attain to life expectancy. It also improves individuals' lives and equalizes societies on a larger scale and to create fairer and healthy societies as well as more economic growth, as adult education furthers greater social mobility, as positive link between learning and work is obvious. For unlocking adult learners' opportunities and potentialities, adult education must be geared towards educational, economic and social development and sure that both the facilitators and curriculum are friendly, all subjects and teaching methods should be learners centred for them to be motivated easy retention

and transition to next level of education or be introduced to the labour world.

Unlocking the learning opportunities and potential of adult learners requires the use of diverse instructional methodologies. The effectiveness of these methods, however, largely depends on the competence of the facilitator, particularly in selecting appropriate approaches and ensuring clarity and accuracy in content delivery. Commonly employed methodologies include lectures, demonstrations, apprenticeship, Think-Pair-Share, field trips, and role play, among others. Nevertheless, the application of teaching methods alone is insufficient without effective evaluation strategies. Assessing learners' levels of understanding can be achieved through various means such as assessment tests, practical application of acquired knowledge, and other reflective activities.

Conclusion

Adult education provides equal opportunities for all individuals, regardless of their social, cultural, or economic backgrounds. It offers a wide range of programmes tailored to the diverse needs and interests of learners. Central to this discipline is the recognition that adult learners deserve respect and active involvement, as they bring valuable life experiences into the learning process. By acknowledging and accommodating these unique characteristics, adult education distinguishes itself from other fields of education. To unlock the full opportunities and potential of learners, adult education must be directed toward educational, economic, and social development,

with both facilitators and curricula designed to be learner-friendly. Furthermore, the discipline upholds inclusivity by ensuring that anyone regardless of status, level of formal education, age, or gender can participate in its programmes and benefit from them according to their aspirations, for unlocking their learning opportunities and potentials.

Recommendations

Based on the discussion so far in this paper, the following recommendations are made:

1. Establishment of Adult Education

Centres: Governments, civil society organizations, and key stakeholders should collaborate to establish well-equipped adult education centres across urban and rural communities. Implementation should involve public-private partnerships, mobilization of community resources, and sustainable funding models. To ensure accessibility and modern relevance, these centres should be equipped with ICT facilities, internet access, and digital learning platforms to support blended and mobile learning approaches.

2. Training and Retraining of

Facilitators: Adult education centres should serve as hubs for continuous professional development of facilitators through structured training, retraining, and certification programmes. Implementation may include periodic workshops, online courses, and exchange programmes supported by government funding and international donor agencies. Facilitators should also be trained in modern

pedagogical approaches, including learner-centered methods and digital literacy.

3. **Incentives for Trained Facilitators and Learners:** Incentive mechanisms should be instituted to motivate both facilitators and learners. For facilitators, this may include career progression opportunities, stipends, teaching grants, and recognition awards. For learners, governments and stakeholders could provide scholarships, subsidized learning materials, or digital devices to enhance participation. Implementation should be linked to performance monitoring and evaluation to ensure sustainability.

4. **Learner-Centered Curriculum Development:** The adult education curriculum should be designed to reflect learners' real-life needs, prior experiences, and personal learning goals. Implementation requires participatory curriculum design workshops involving facilitators, learners, and community representatives. Modern approaches such as competency-based education and problem-solving models should be integrated. Additionally, digital tools such as e-learning modules, multimedia resources, and interactive platforms should be embedded to make learning more flexible, practical, and relevant to 21st-century demands.

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