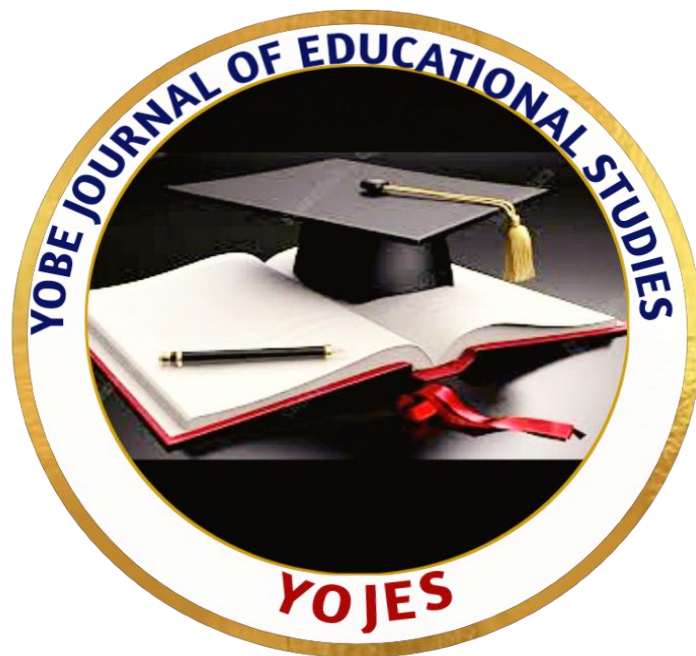


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FACULTY AGING, RETIREMENT AND THE CRISIS OF CURRICULUM SUSTAINABILITY IN NIGERIAN UNIVERSITIES

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ABSTRACT

Faculty aging and retirement have emerged as significant challenges to curriculum sustainability in universities, particularly in developing countries such as Nigeria where shortages of qualified academic staff, weak succession planning and limited institutional capacity persist. This theoretical study examines the interconnected effects of faculty aging, retirement and curriculum sustainability within the Nigerian Universities system. Evidence indicates that a growing proportion of senior academics are approaching retirement, while inadequate recruitment and brain drain reduce the availability of younger replacements. In many Nigerian universities, over 40% of senior academic staff in specialized disciplines are nearing retirement, creating substantial risks for curriculum continuity, innovation and programme stability. The study highlights how retirement-related knowledge loss, delayed curriculum review, technological adaptation gaps and policy inconsistencies contribute to outdated curricula and weakened institutional resilience. Drawing on Human Capital Theory, Knowledge Management Theory and Systems Theory, the sustainable curriculum development depends on proactive workforce renewal, structured knowledge transfer and continuous academic innovation. The study concludes that addressing faculty demographic transitions through strategic recruitment, succession planning and curriculum reform is essential for maintaining educational quality, relevance and long-term sustainability in universities. And recommends that Government and university management should strengthen recruitment and retention of younger academics to balance workforce demographics and sustain curriculum continuity.

Keywords: *Faculty Aging, Faculty Retirement, Curriculum Sustainability and University Workforce*

Introduction

The global Universities landscape is undergoing a notable demographic transition characterized by an aging academic workforce and increasing rates of faculty retirement. This shift has far-reaching implications for curriculum sustainability, particularly in systems where disciplinary expertise, institutional memory and pedagogical continuity are concentrated among senior

academics. Contemporary studies argue that faculty aging constitutes not only a demographic trend but also a structural challenge that affects curriculum stability, innovation and long-term educational quality (Salifu et al., 2021). As universities respond to rapid technological and societal transformations, the exit of experienced faculty without robust succession planning mechanisms threatens the continuity of academic programmes and the evolution of curricula.

In Nigeria, the effects of faculty aging and retirement are increasingly evident and practically observable across universities. The Universities system continues to experience shortages of qualified academic staff, weak recruitment pipelines and funding constraints, which collectively intensify the consequences of faculty exits (Agbabiaka & Albert, 2025; Obeta & Edwin, 2024). For instance, in several Nigerian federal universities, core courses in disciplines such as Educational Foundations and Curriculum and Educational Technology courses are often handled by a small number of senior lecturers or professors. When such individuals retire, departments sometimes resort to part-time or adjunct lecturers who may not be fully integrated into curriculum planning processes. This can lead to inconsistencies in course delivery, delays in student project supervision and in extreme cases, temporary suspension of specialized courses. In some institutions, postgraduate programmes have experienced disruptions due to the unavailability of qualified supervisors following the retirement of senior faculty.

Regional variations further illustrate how this issue manifests across Nigeria. In the southern regions, particularly the North-West, South-West and South-South, studies have linked curriculum stagnation to limited faculty renewal and insufficient integration of emerging knowledge areas (Alao et al., 2024). A practical example can be observed in the slow incorporation of cutting-edge fields such as artificial intelligence, data science and cybersecurity into existing curricula. In some universities, older course structures remain unchanged because the faculty members with the expertise to redesign and implement updated curricula are either nearing retirement or have already exited the system. Consequently, graduates may lack exposure to industry-relevant skills, affecting employability and competitiveness in the global labor market.

Similarly, in the South-East, retirement transitions are often characterized by weak knowledge transfer mechanisms (Ogbonnaya et al., 2022). In practice, this may involve the loss of unpublished teaching materials, research data and curriculum design frameworks developed over decades by senior academics. For example, when a professor who has long coordinated a specialized course retires without mentoring a successor, the incoming lecturer may need to redesign the course from scratch, potentially leading to gaps in content coverage or misalignment with programme objectives. This disrupts not only curriculum continuity but also the overall coherence of academic programmes.

In Northern Nigeria, particularly in the North-West, North-East and North-Central regions, the situation is compounded by infrastructural deficits and limited human capacity (Abenu et al., 2024; Abubakar et al., 2024). A common practical scenario is the reliance on visiting lecturers from other regions to fill teaching gaps created by retirements. While this provides a temporary solution, it often affects the consistency of teaching schedules and limits sustained student-faculty engagement. In some cases, departments are unable to introduce new courses or revise existing ones due to the absence of adequately trained staff, resulting in outdated curricula that do not reflect current academic and industry trends. Additionally, the limited adoption of digital and technology-enhanced learning approaches in these regions is often linked to the shortage of younger, technologically proficient faculty who can drive such innovations.

The broader crisis of curriculum sustainability in Nigeria is therefore closely tied to systemic and policy-related challenges. Persistent issues such as outdated curricula, inadequate professional development opportunities and weak institutional support for innovation continue to hinder curriculum responsiveness (Shehu & Sulaiman, 2024; Ukhurebor et al., 2024). For example, in some universities, curriculum review exercises are delayed because the committees responsible are dominated by senior faculty nearing retirement, with limited input from younger academics who may bring new perspectives. Furthermore, the migration of early-career academics to better-funded institutions abroad exacerbates the imbalance, leaving behind an aging workforce with limited capacity for curriculum transformation.

Against this backdrop, this theoretical paper examines the interconnections between faculty aging, retirement and curriculum sustainability in universities, with particular emphasis in the Nigerian. By integrating empirical evidence with practical illustrations, the paper highlights how demographic shifts within the academic workforce influence curriculum continuity, adaptability and institutional resilience. It further provides a conceptual basis for rethinking faculty succession planning, strengthening knowledge transfer mechanisms and promoting sustainable curriculum development to ensure that universities remain responsive and resilient in the face of ongoing demographic and structural changes.

Theoretical Reviews

The theoretical foundation for understanding faculty aging, retirement and curriculum sustainability in universities is anchored on a combination of Human Capital Theory, Knowledge Management Theory and Systems Theory, which collectively explain how academic workforce dynamics influence curriculum continuity and institutional resilience.

Human Capital Theory, developed by Theodore Schultz (1961) and further expanded by Gary Becker (1964), provides a primary lens for understanding the value of academic staff in universities. Schultz emphasized that investments in education and training enhance human productivity and economic development, while Becker argued that knowledge, skills, and experience constitute forms of capital that generate value for individuals and organizations. The theory posits that individuals possess competencies that contribute to organizational productivity and long-term growth. In universities, academic staff represent critical human capital responsible for teaching, research, curriculum development, and mentorship. Through years of experience, aging faculty accumulate valuable intellectual capital, making them essential to academic quality and institutional reputation. However, their retirement may result in the loss of expertise, institutional memory, and professional knowledge, thereby weakening curriculum sustainability and institutional effectiveness. In Nigeria, this challenge is compounded by limited recruitment opportunities, inadequate succession planning, and brain drain, which reduce the availability of qualified academics needed to sustain curriculum innovation and continuity.

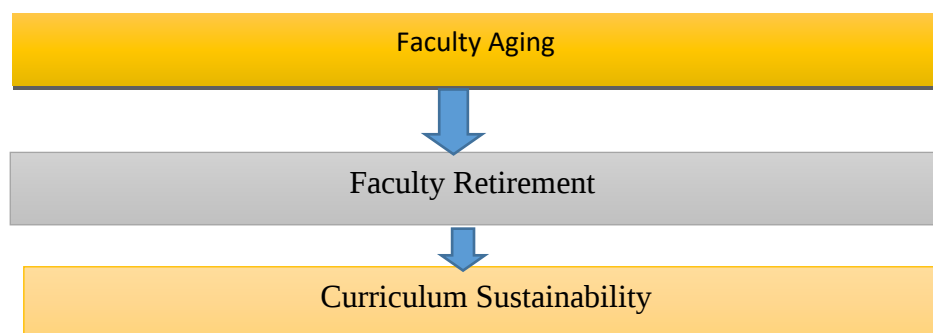
Knowledge Management Theory, developed by Ikujiro Nonaka and Hirotaka Takeuchi (1995), provides a framework for understanding how knowledge is created, stored, shared, and utilized within organizations. The theory emphasizes that organizational success depends on the effective management of both explicit knowledge, such as curriculum documents, lecture notes, and research outputs, and tacit knowledge, including teaching experience, mentoring practices, and curriculum interpretation. Nonaka and Takeuchi's contribution, particularly through the SECI Model of knowledge creation, highlights the continuous conversion of tacit and explicit knowledge to promote organizational learning and innovation. In universities, academic staff serve as key repositories of both forms of knowledge. However, faculty retirement often results in the loss of valuable tacit knowledge, which is difficult to document and transfer formally. When experienced lecturers retire without structured knowledge-sharing mechanisms, institutions lose critical expertise in curriculum design, instructional strategies, and academic mentorship. This can create disruptions in teaching and weaken curriculum sustainability, particularly in specialized disciplines where experienced faculty are difficult to replace.

Systems Theory, developed by Ludwig von Bertalanffy in 1968, provides a broader structural perspective for understanding universities as interconnected systems composed of inputs (faculty, students, and resources), processes (teaching, research, and curriculum development), and outputs (graduates and knowledge production). Bertalanffy's major contribution was the development of General Systems Theory, which emphasizes that the effectiveness of an organization depends on the interaction and interdependence of its components. Within this framework, faculty aging and retirement represent disruptions in the input subsystem that can subsequently affect institutional processes and outputs. For example, the retirement of experienced academic staff may reduce teaching capacity, limit curriculum review activities, and negatively influence student learning outcomes. The theory highlights that curriculum sustainability is not an isolated function but the result of balanced interactions among institutional components. This perspective is further supported by the concepts of succession planning and organizational continuity, which emphasize proactive workforce transition strategies to minimize disruptions and ensure the continuity of academic functions and curriculum sustainability.

Generally, the theoretical framework underscores that curriculum sustainability is not solely a pedagogical issue but a systemic outcome influenced by human capital dynamics, knowledge transfer processes and institutional structures. Understanding these relationships provides a foundation for developing strategies that enhance academic workforce planning and strengthen the long-term sustainability of university curricula.

Conceptual Analysis

This study conceptualizes the effects of faculty aging, retirement and curriculum sustainability as an interconnected system of relationships within Nigerian university. The conceptual framework is anchored on three core constructs:



Research Develop, (2026)

Faculty Aging

Faculty aging refers to the increasing proportion of academic staff within older age cohorts, typically characterized by long years of service, accumulated expertise and proximity to retirement. This trend has become more evident in Universities systems globally and is particularly pronounced in Nigeria due to limited recruitment, brain drain and funding constraints. Aging faculty play a vital role in universities as custodians of institutional memory, disciplinary knowledge and academic leadership, contributing significantly to curriculum development, mentoring and research continuity. Nevertheless, the growing dominance of older

academics within the workforce also presents notable challenges. Empirical studies indicate that age influences the adoption of innovative teaching practices and digital technologies. For example, research in Nigerian universities shows that younger lecturers tend to demonstrate higher engagement with Learning Management Systems (LMS), while older faculty often face barriers related to technological adaptation and limited training opportunities (Ukaegbu & Zaid, 2025). This gap has direct implications for curriculum delivery, particularly in an era where digital and technology-enhanced learning are essential for maintaining relevance.

In addition, faculty aging reflects structural imbalances within the academic workforce. Many Nigerian universities exhibit a “top-heavy” staff structure, where a large proportion of academics are nearing retirement with insufficient replacement by early-career scholars. Practically, this is evident in departments where senior professors dominate teaching and curriculum design, especially in specialized fields. When these individuals retire, institutions often struggle to replace their expertise, leading to disruptions in course offerings and programme continuity. Furthermore, while senior academics contribute valuable experience, studies suggest that younger faculty are often more engaged in emerging and interdisciplinary fields, which are critical for curriculum innovation (Abramo et al., 2018). The reliance on aging faculty may therefore slow the integration of contemporary areas such as artificial intelligence and data science into university curricula. This challenge is compounded by limited opportunities for professional retraining and institutional support for innovation in many Nigerian universities (Eleje et al., 2025). Generally, faculty aging is not merely a demographic issue but a structural factor influencing curriculum sustainability. Although aging academics provide stability and expertise, their increasing proportion within the workforce, combined with weak recruitment and succession planning, creates vulnerabilities in curriculum relevance, adaptability and long-term institutional resilience.

Faculty Retirement

Faculty retirement refers to the formal withdrawal of academic staff from active service, typically upon reaching statutory retirement age or completing required years of service. It represents a critical transition point in the academic workforce, resulting in the loss of both

explicit knowledge (such as course materials, research outputs and documented curriculum frameworks) and tacit knowledge (including teaching experience, mentorship skills and institutional insights). Within the conceptual framework of this study, retirement functions as an intervening variable that mediates the relationship between faculty aging and curriculum sustainability. The literature indicates that retirement has significant implications for knowledge continuity and academic programme stability. In many universities, particularly in Nigeria, senior academics play central roles in curriculum design, postgraduate supervision and accreditation processes. Their exit often creates immediate gaps in expertise, especially in specialized disciplines where qualified replacements are limited. Studies have shown that retirement transitions are frequently inadequately managed, with minimal institutional preparation for knowledge transfer or role succession (Ogbonnaya et al., 2022). As a result, departments may experience disruptions in course delivery, delays in student supervision and reduced capacity for curriculum review and innovation.

The absence of structured succession planning further amplifies these challenges. In practice, many universities do not implement systematic mentoring or co-teaching arrangements that would allow younger academics to gradually assume responsibilities before senior staff retire. Consequently, when retirement occurs, incoming lecturers may lack the experience or familiarity with existing curriculum structures, leading to inconsistencies in content delivery and assessment practices. In some cases, institutions resort to re-engaging retired professors on contract appointments to sustain teaching and meet accreditation requirements, highlighting the depth of reliance on outgoing faculty and the weakness of replacement systems. Moreover, retirement contributes to cumulative workforce shortages when multiple faculty members exit within a short period, a situation common in systems with aging staff populations. This can result in increased workload for remaining staff, reduced course offerings and delays in curriculum updates. In Nigerian, these effects are often compounded by bureaucratic recruitment processes, funding limitations and the migration of younger academics to better opportunities, further weakening institutional capacity.

Generally, faculty retirement is a pivotal transitional mechanism through which the effects of aging manifest in curriculum sustainability outcomes. Without effective succession planning, knowledge management systems and proactive staff development strategies, retirement can lead to significant disruptions in teaching, research and curriculum continuity. Conversely, when properly managed, it can provide an opportunity for renewal, innovation and the integration of new expertise into academic programmes.

Curriculum Sustainability

Curriculum sustainability refers to the capacity of academic programmes to remain relevant, adaptive and capable of delivering high-quality learning outcomes over time. It encompasses continuous curriculum review, integration of emerging knowledge and technologies, alignment with labour market demands and resilience to institutional and environmental changes. In contemporary Universities discourse, curriculum sustainability is increasingly viewed as a dynamic process rather than a fixed outcome, requiring constant renewal to reflect global trends, technological advancements and societal needs. The literature emphasizes that sustainable curricula depend on both structural mechanisms and human capacity. Structurally, universities are expected to implement periodic curriculum review processes, quality assurance frameworks and stakeholder engagement strategies to ensure that programmes remain current and responsive (Shehu & Sulaiman, 2024). However, in many Nigerian universities, these processes are often irregular or delayed due to bureaucratic constraints and limited institutional support. For example, curriculum review cycles that should occur every few years are sometimes postponed, resulting in outdated course content that does not reflect recent developments in fields such as artificial intelligence, data science and digital education.

From a human resource perspective, curriculum sustainability is heavily dependent on the availability of a stable and competent academic workforce. Lecturers are central to curriculum design, implementation and evaluation; therefore, any disruption in staffing such as those caused by faculty aging and retirement directly affects curriculum continuity. Empirical studies indicate that shortages of qualified academic staff in Nigeria have led to reduced course offerings, overburdened lecturers and limited capacity for curriculum innovation (Agbabiaka & Albert,

2025). In practice, this may manifest in situations where a single lecturer handles multiple courses outside their specialization, thereby affecting the depth and quality of content delivery.

Furthermore, sustainable curricula require alignment with industry and societal needs. Research has shown that many university programmes in Nigeria face challenges in producing graduates with relevant, employable skills due to weak collaboration between academia and industry (Nwajiuba et al., 2020). For instance, some Computer Science programmes still emphasize theoretical components while offering limited exposure to practical and emerging areas such as cybersecurity or machine learning. This misalignment reduces graduate competitiveness and highlights gaps in curriculum responsiveness.

Another critical dimension of curriculum sustainability is resilience, defined as the ability of academic programmes to withstand disruptions such as staff turnover, policy changes, or technological shifts. In situations where succession planning and knowledge transfer mechanisms are weak, curricula become vulnerable to instability. For example, the retirement of a senior academic who has long coordinated a specialized course can lead to temporary suspension or restructuring of that course due to lack of immediate replacement. Such disruptions undermine programme coherence and student learning outcomes. Generally, curriculum sustainability serves as the key dependent variable in this study, reflecting the combined effects of faculty-related and institutional factors. While sustainable curricula require supportive policies, infrastructure and funding, they are ultimately anchored in the availability and capability of academic staff.

Empirical Evidence

Recent scholarship demonstrates that faculty aging and retirement constitute a growing concern for Universities systems globally, with significant implications for curriculum sustainability, instructional quality and institutional continuity. Empirical and theoretical studies increasingly position demographic shifts within the academic workforce as a structural driver of educational instability, particularly in developing country such as Nigeria. A major strand of literature focuses on the effects of age on instructional practices and innovation. Evidence from Nigerian universities shows that age significantly influences lecturers' engagement with modern

pedagogical tools such as Learning Management Systems (LMS). For instance, International Journal of Research and Innovation in Social Science reports that younger lecturers tend to demonstrate higher adoption and effective use of digital learning technologies, while older academics often experience barriers related to technological complexity and resistance to change (Ukaegbu & Zaid, 2025). This generational gap has direct implications for curriculum delivery, particularly in an era where digital integration is central to curriculum relevance and sustainability.

Complementing this, studies on retirement dynamics in Nigerian universities highlight the institutional consequences of faculty exit. Research conducted at the University of Nigeria reveals that retirement is often associated with inadequate preparation, limited institutional support and weak transition mechanisms (Ogbonnaya et al., 2022). Such conditions hinder effective knowledge transfer and disrupt continuity in teaching and curriculum implementation. Broader evidence also suggests that due to shortages of qualified academic staff, Nigerian universities frequently re-engage retired professors to sustain programme accreditation and teaching capacity. This practice underscores the depth of reliance on aging faculty and signals systemic weaknesses in academic workforce renewal.

Another body of literature examines curriculum sustainability and institutional constraints. Studies emphasize that Nigerian universities face persistent challenges such as outdated curricula, insufficient funding, rigid governance structures and a limited pool of qualified faculty (Agbabiaka & Albert, 2025). These factors collectively undermine the ability of institutions to continuously update and sustain relevant academic programmes. Furthermore, recent research published in *Frontiers in Education* highlights that effective curriculum sustainability requires continuous review, innovation and adaptation processes, yet such mechanisms remain weak or inconsistently implemented in many Nigerian universities. Additionally, literature on Universities quality in Nigeria links curriculum deficiencies to broader systemic issues, including poor alignment with labour market needs and limited stakeholder engagement (Nwajiuba et al., 2020). This highlights the interconnected nature of individual career trajectories and institutional sustainability.

Challenges of Faculty Aging and Retirement of Universities Staff

The sustainability of university curricula in faculty aging and retirement is constrained by several interrelated structural, institutional, and human resource challenges. These challenges are particularly evident in developing university systems such as Nigeria, where demographic imbalances, policy gaps, and infrastructural limitations weaken curriculum resilience.

Shortage and Uneven Distribution of Qualified Academic Staff

One of the major challenges is the shortage and uneven distribution of qualified academic staff. Many Nigerian universities experience a declining pipeline of younger academics due to limited recruitment opportunities, inadequate funding for postgraduate training, and persistent brain drain. Consequently, aging faculty dominate key teaching, research, and curriculum development roles. When retirements occur, institutions often struggle to replace specialized expertise, leading to disruptions in course delivery and programme continuity (Agbabiaka & Albert, 2025). In some cases, departments are compelled to merge courses, reduce elective offerings, or rely on underqualified adjunct staff, thereby weakening curriculum quality and coherence.

Inadequate Succession Planning and Knowledge Transfer Systems

Another significant challenge is the absence of effective succession planning and knowledge transfer mechanisms. In many universities, there are no structured systems to facilitate the transfer of tacit knowledge, teaching strategies, mentoring skills, and curriculum design expertise from retiring faculty to younger academics. Research indicates that retirement transitions are often abrupt, with limited mentoring and inadequate documentation of institutional practices before faculty exit (Ogbonnaya et al., 2022). As a result, valuable institutional knowledge is lost, thereby undermining curriculum continuity, particularly in specialized disciplines where expertise is concentrated among a few individuals.

Slow Pace of Curriculum Review and Innovation

The slow pace of curriculum review and innovation also constitutes a major constraint to curriculum sustainability. Effective curriculum sustainability requires regular updating to reflect emerging knowledge, technological advancements, and labour market demands. However, many

Nigerian universities continue to operate with outdated curricula due to bureaucratic delays, inadequate stakeholder involvement, and weak academic leadership renewal. Consequently, emerging fields such as artificial intelligence, cybersecurity, and data science remain poorly integrated or entirely absent from some academic programmes, thereby limiting graduates' competitiveness in the global labour market (Shehu & Sulaiman, 2024).

Technological Adaptation Barriers among Aging Faculty

Technological adaptation barriers among aging faculty further complicate curriculum sustainability. Older academics may experience difficulties in adopting digital teaching tools, learning management systems, virtual learning platforms, and blended learning approaches. This situation creates disparities in instructional delivery and limits the integration of technology-enhanced learning into university curricula. In practice, some lecturers continue to rely predominantly on traditional lecture methods despite institutional efforts to promote digital learning environments.

Funding Constraints and Infrastructural Deficits

Institutional funding constraints and infrastructural deficits also pose serious challenges. Limited financial resources restrict universities' ability to recruit new academic staff, provide continuous professional development opportunities, and invest in modern teaching technologies. This challenge is particularly evident in public universities, where budgetary allocations are often insufficient to support comprehensive curriculum reforms and staff renewal initiatives. Consequently, institutions become increasingly dependent on aging faculty, thereby heightening curriculum sustainability risks.

Policy Inconsistency and Weak Governance Structures

Policy inconsistency and weak governance structures represent another major challenge. In many cases, university policies relating to retirement age, staff recruitment, promotion, and academic workforce planning are inconsistently implemented. This creates uncertainty in workforce management and limits universities' ability to strategically plan for faculty transitions. Without coherent policies that effectively link retirement planning to curriculum renewal, institutions remain vulnerable to sudden disruptions in academic programmes and institutional operations.

Implications

The relationship between faculty aging, retirement and curriculum sustainability has wide-ranging consequences for universities. It affects how institutions are managed, how academic programmes are delivered, the quality of teaching and research and how policies and workforce planning are designed. These implications are particularly important in locations where universities already face staffing shortages and limited institutional capacity, such as in Nigeria.

1. Academic continuity and programme stability are threatened as retirements occur without proper succession planning, leading to gaps in teaching, supervision and accreditation challenges.
2. Curriculum relevance and innovation decline when updates depend heavily on senior academics, reducing responsiveness to emerging fields and labour market needs.
3. Weak succession planning and workforce management result in reactive staffing responses, limiting long-term institutional stability and growth.
4. Teaching quality and instructional diversity are affected due to reduced exposure to modern pedagogical approaches and digital learning tools.
5. Policy gaps highlight the need for structured mentorship, phased retirement systems and compulsory knowledge transfer frameworks.
6. Research productivity and postgraduate supervision capacity decline, affecting academic leadership development and institutional intellectual strength.

Thus, the implications of faculty aging and retirement extend beyond staffing concerns to the core functioning of universities. Therefore, this highlights the urgent need for integrated strategies that link human resource management with curriculum planning, ensuring that academic programmes remain sustainable, relevant and resilient in the face of demographic transitions.

Conclusion

Faculty aging and retirement pose major threats to curriculum sustainability by reducing experienced academic capacity, weakening knowledge transfer and disrupting programme

continuity. In Nigeria, these challenges are worsened by weak recruitment, poor succession planning, funding limitations and outdated policies. Ensuring sustainable curricula requires strategic workforce renewal, effective mentorship and strong institutional planning to maintain educational quality, relevance and long-term university resilience.

Recommendations

1. Universities should implement structured succession planning and mentorship programmes to ensure effective knowledge transfer before senior faculty retire.
2. Government and university management should strengthen recruitment and retention of younger academics to balance workforce demographics and sustain curriculum continuity.
3. Institutions should establish regular curriculum review systems that integrate emerging technologies, industry needs and contributions from both senior and early-career faculty.
4. Increased funding should be provided for faculty development, digital innovation and institutional capacity building to enhance curriculum sustainability and academic resilience.

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INFLUENCE OF EMOTION REGULATION AND MORAL REASONING ON ACADEMIC PERFORMANCE OF SENIOR SECONDARY SCHOOL STUDENTS IN ADO EKITI METROPOLIS, EKITI STATE, NIGERIA

BY

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ABSTRACT

Deteriorating moral values and ability to regulate emotion had been identified by teachers and parents of adolescents globally. This ex-post-facto research investigated the extent to which emotion regulation and moral reasoning influence academic performance among senior secondary school students in Ado Ekiti Metropolis, Ekiti State, Nigeria. Non-significant influence of moral reasoning (MR) and emotion regulation (ER) on academic performance was hypothesized; similarly, the absence of a significant difference in moral reasoning and emotion regulation between day and boarding secondary schools was also hypothesized. The population of the study was 1828 students, out of which a sample of 322 students (196 day, 126 boarding students) was selected using a multi-stage sampling technique. Adapted versions of the Kooning Emotion Regulation Inventory (KERI) and Defining Issues Test (DIT) were used as data collection instruments for emotion regulation and moral reasoning respectively. Average terminal performance of each student across all subjects was used as the measure of academic performance. The instruments were validated using a convergent validity procedure. The Cronbach's alpha reliability index calculated after pilot testing of the instruments was 0.88 for KERI and 0.91 for DIT. Regression analysis and t-test for independent samples were used as data analysis instruments. Among other things, findings of the study revealed that 14% of high academic performance is attributed to moral reasoning; similarly, 17% of high academic performance is also attributed to emotion regulation. The combination of MR and ER influences academic performance by 10%. Exemplary moral conduct and restraint by teachers and parents, as well as the enhancement of MR and ER strategies among day students, were recommended.

Keywords: emotion regulation; moral reasoning; academic performance; adolescence.

Introduction

Recent developments in the world of 21st century characterize a tumultuous invasion of social media, unrestricted access to social pages, Internet content, and the production, translation, and transmission of all manner of online information. These have been posing serious challenges to the emotional stability and moral alertness of young adolescents. Teachers and parents globally

were swiftly swindled by this era of modernism where moral issues are no longer wholly manipulated by them but by peers, the community, and alien cultures set to distort societal norms and values. This has led to increased aggression and an inability among students to regulate emotion, which in a vicious circle leads to moral leprosy (Schunk, & DiBenedetto, 2020).

As with many psychological constructs, consensus is yet to be reached on the definition of emotion regulation. However, two points are worth noting. First is the agreement that emotion regulation is not a function but rather a process, or involves a set of processes or systems (e.g., attention, cognitive, behavioral, social, and biological). Secondly, these processes act to modulate, manage, or organize emotion to help individuals meet the demands of their environment. Emotion regulation, therefore, refers to any process that acts upon the emotion (Gbollie & Keamu, 2021). ER is a modulation, rather than the elimination of emotion, so that the information provided by emotional responses can be used to guide goal-directed behavior (Eremie & Nwagbogwu, 2018). Feldman (2011). conceptualized ER as a repertoire of strategies that individuals can use to enhance or suppress their emotions—a broad construct that covers a range of processes that may be conscious or unconscious, automatic or controlled. Chervonsky & Hunt (2019) expanded this definition by highlighting the goal-oriented, functional nature of emotion regulation in terms of achieving desired emotional outcomes and broader goals.

Gross (2020) focused on the stages in emotion regulation processes at which regulation strategies are employed. He proposed two broad types of processes: antecedent-focused and response-focused. Antecedent-focused emotion regulation refers to the strategies employed to modify the factors that elicit the emotion prior to it being experienced. These can include visiting friends and altering the appraisals of the environment. Response-focused emotion regulation relates to the strategies employed to modify the experience of an emotion while it is being experienced, such as masking feelings of sadness. These processes are viewed to be reciprocal in nature, highlighting the dynamic nature of emotion regulation.

On the theories of emotion regulation, this study is aligned with Gross and Thompson's Process Model Theory of Emotion Regulation (Gross & Thompson, 2007). This model consolidates James J. Gross's process model of emotion by finding it useful to characterize several features of a prototypical emotional response. The first feature of emotion is its trigger or situational

antecedent that can be internal or external. A second feature of emotion is attention; whether internal or external, a situation must be attended to in order for an emotional response to occur. A third feature of emotion is appraisal. Once situations are attended to, they are appraised for their bearing on one's currently active goals, a process referred to as appraisal. Goals are based on one's values, cultural milieus, current situational features, societal norms, developmental stage of life, and personality. The basis of one's goal bears the reasons that two people could face exactly the same situation, yet have different goals and, therefore, attend to and appraise the situation differently. Positive emotions, therefore, result when a situation is appraised as proceeding in line with one's goals, and negative emotions may result when a situation is appraised to be counter to one's goal. Once a situation has been attended to and appraised as relevant to an individual's goals, the appraisal sets in motion an elaborated emotion response, which is the fourth feature of emotion; this involves a coordinated set of loosely coupled response tendencies, including experiential (feeling), behavioral, and central and peripheral physiological systems.

A fifth feature of emotion is its malleability. Once initiated, emotion responses do not necessarily follow a fixed and inevitable course. Emotions can interrupt what is being done and force themselves upon awareness, yet they must compete with other responses to our current situation and be overtaken by those. It is this last aspect of emotion that is most crucial for an analysis of emotional regulation and dysregulation. It is this feature that gives rise to the possibility for regulation. Gross and Thompson (2007) further theorized that the potentially overwhelming number of processes involved in regulating emotion can be better understood by proposing a temporal model of emotion regulation. In this model, strategies are distinguished in terms of when they have their primary impact on the emotion-generating process, either before the response (antecedent-focused: situation selection, situation modification, attentional deployment, and cognitive change) or after the response (response-focused: response modulation). Antecedent-focused strategies refer to emotional response strategies used before the behavioral and physiological emotion responses have become fully activated. By contrast, response-focused strategies refer to the things one does once an emotion is under way after the response tendencies

have already been generated. In the process model of emotion regulation, five groups of specific ERS are located along the timeline of emotional processes.

As for moral reasoning, Piaget's and Kohlberg's theories are the most pronounced. Feldman (2011) reported that Kohlberg (1984, as cited in Feldman, 2011) suggested that the changes in moral reasoning can be understood best as a three-level sequence. His theory assumes that people move through the levels in a fixed order and that they cannot reach the highest level until about age 13—primarily because of limitations in cognitive development before that level. Kohlberg's levels of moral reasoning are therefore as follows:

1. Level 1 Pre-conventional morality: At this level, the concrete interests of the individual are considered in terms of rewards and punishments.
2. Level 2 Conventional morality: At this level, people approach moral problems as members of society. They are interested in pleasing others by acting as good members of society.
3. Level 3 Post-conventional morality: At this level, people use moral principles which are seen as broader than those of any particular society.

However, many people never reach the highest level of moral reasoning. In fact, Kohlberg found that only a negligible percentage of adults get higher above the second level of his model (Efferdinger et al., 2017). Although Kohlberg's theory has had a substantial influence on our understanding of moral development, the research support is mixed. One difficulty with the theory is that it pertains to moral judgments, not moral behavior. Knowing right from wrong does not mean that we will always act in accordance with our judgments. In addition, the theory applies primarily to Western society and its moral code; cross-cultural research conducted in cultures with different moral systems suggests that Kohlberg's theory is not necessarily applicable (Kadir, 2024; Mahoney et al., 2021; Oladipo & Adenaike, 2022).

Many researchers have tried to investigate the relationship between emotion regulation and academic performance. In a study by Gbollie & Keamu (2017) the relationship between emotion regulation strategies—namely cognitive reappraisal and expressive suppression (a form of emotion dysregulation)—and academic performance was carried out. The study found that there is a significant relationship between Expressive Suppression and CGPA; however, no significant

relationship existed between Cognitive Reappraisal and CGPA. Regression model revealed that both cognitive reappraisal and expressive suppression did not predict students' academic performance.

In an experimental study by Dillon et al. (2007) manipulated emotion regulation strategies at encoding and administered explicit and implicit memory tests. Using reappraisal to decrease the personal relevance of pictures had different effects depending on picture type. Paired with unpleasant pictures, the decrease cue tended to improve recall. Paired with neutral stimuli, the decrease cue tended to impair recall. Emotion regulation did not affect perceptual priming. Results highlight dissociable effects of emotion regulation on explicit and implicit memory, as well as dissociations between regulation strategies with respect to explicit memory. In yet another study, Gumora and Arsenio (2020) investigated the connections of middle school students' emotional dispositions and academic-related affect with their school performance. Results indicated that although students' emotion regulation, general affective dispositions, and academic affect were related to each other, each of these variables also made a unique significant contribution to students' GPA, over and above the influence of other cognitive contributors. Overall, these results provide support for the role of socio-emotional factors in students' school performance, while also clarifying some of the uniquely affective contributors (rather than relationships or goals) to that performance. Investigating the role of emotion regulation in children's early academic success, Kwon et al. (2017) used a sample of 325 kindergarteners. A mediational analysis addressed the potential mechanisms through which emotion regulation relates to children's early academic success. Results indicated that emotion regulation was positively associated with teacher reports of children's academic success and productivity in the classroom and standardized early literacy and math achievement scores.

Despite these creeping, challenging situations, Nigeria's philosophy of education, as enumerated in the National Policy on Education (2014), is based among other things on "the development of the individual into a morally sound and effective citizen." The terms effective citizen and morally sound may be operationalized as emotion regulation, without which there will be no effectiveness in human existence, and high moral reasoning. Teachers are therefore requested by the national policy, parents, and the community to produce students not only with impressive

academic performance, but also effective and morally sound students despite the influx of a myriad of moral and emotion regulation predators (Yusuf et al., 2024). Now more than ever before, teachers are challenged with ensuring quality of learning for students in the midst of inadequate instructional materials and motivation, highly stressed homes, and volatile societal and school environments, regardless of the developmental stages of the students who are mostly in the period of storm and stress. It is these realities that are sometimes implicated in the continuous dwindling of students' academic performance and achievement, partly due to the assertion that unmotivated teachers and deeply stressed students may not be compatible bedfellows. Where the stresses of life become persistent and addiction to social media and the internet becomes resistant, emotion regulation becomes weak and ultimately morality becomes questionable. It is the assumption of this study, therefore, that students' consistent failure in terminal, qualifying, and Senior Secondary Certificate Examinations (SSCE) is consequent upon eroded moral values and a gradual slide in students' ability to regulate emotions. Based on the aforementioned assumptions, three hypotheses were formulated to guide the study.

Hypotheses

The following hypotheses were formulated:

1. Emotion regulation and moral reasoning do not significantly influence academic performance of Senior Secondary School Students in Ado Ekiti.
2. There is no significant difference in emotion regulation between Boarding and Day Senior Secondary School Students in Ado Ekiti.
3. There is no significant difference in moral reasoning between Boarding and Day Senior Secondary School Students in Ado Ekiti.

Methodology

The study is based on an ex-post-facto design. The population of the study comprised 1828 male and female year 2 senior secondary school students in public and private secondary schools in Ado Ekiti Metropolis. A proportionate stratified sample was used, thereby identifying the percentage by which each school was represented in the population, then the percentage of boarding and day school students. In the selection of actual sample subjects, a systematic

sampling technique was adopted with the aid of school registers. In this process, 322 (196 day, 126 boarding students) sampled students as recommended by Cozby (2011) were selected. Data collection instruments for the study were an adapted version of the Kooning Emotion Regulation Inventory (KERI) for emotion regulation. ER-strategies were measured through the utilization of an adapted version of the Emotion Regulation Inventory for Negative Emotions (ERI-NE). The 22-item inventory was composed of five Likert-type scales (scores: 0–100): distraction (distracting oneself), reappraisal (seeing the situation/emotion in a more positive light), empathic suppression (suppressing emotions so as not to impose on others), uncontrolled expression (expressing emotions unrestrainedly), and controlled expression (communicating emotions). As noted by Efferdinger, Kooning, Klaus, and Jagsch (2017), the internal consistency for the scales was good to excellent ($0.81 \leq \alpha \leq 0.97$) (1 = very unsatisfied to 5 = very satisfied). The Defining Issues Test (DIT) for moral reasoning measures students' moral reasoning; its original reliability index was 0.92. For the purpose of this study, construct validity of KERI was determined after concurrent administration of the instrument with the Difficulties in Emotion Regulation Scale on a pilot sample of 40 students from non-participating schools. Validity was established using a convergent validity procedure, while Cronbach's alpha reliability for KERI was 0.88 and for DIT, a test-retest reliability index was found to be 0.91. Academic performance data was collated through a pro-forma recording of the average individual student scores in all their nine subjects for the term. Data was thereafter analyzed using regression analyses. Differences in emotion regulation and moral reasoning between day and boarding students were analyzed using the t-test.

Results

The Analysis of Variance (ANOVA) was used to measure the fitness of the regression model. From Table 1, the F-statistic value is 18.47 while the p -value is 0.001, which indicates that the regression model fits the data at hand because the p -value (sig.) is at 0.001, which is far less than 0.05, which is the region of rejection.

Table 1: Overall Analysis of Variance for the Regression Model Predicting Academic Performance

Model	SS	df	MS	F	Sig. (p -value)
Regression	3739.63	2	1869.81	18.47	< .001
Residual	32293.11	319	101.23		
Total	36032.74	321			

Hypothesis One: Emotion regulation and moral reasoning do not significantly influence academic performance of Senior Secondary School Students in Ado Ekiti.

Table 2: Inference and Coefficients for Individual Predictors of Academic Performance

Variable	B	SE	Beta (β)	t	p -value
Constant	47.626	3.408	-	13.976	0.000
Emotion Regulation	0.174	0.035	.263	4.89	0.000
Moral Reasoning	0.143	0.033	.235	4.37	0.000

The regression coefficient table shows the effect of the independent variables over the dependent variable. The analysis shows that when the independent variable is constant, we have a t-statistic value of $t=13.97$ with a p -value of .000, which is statistically significant. Similarly, results from the table show that emotion regulation serves as a predictor of good academic performance of students. At this point, the result is statistically significant at $t=4.89$, $p=0.000$, $p<.05$. On the other hand, the unstandardized coefficient measures the extent to which the independent variable predicts the dependent variable. From the table, when all other factors are constant, moral reasoning is predicted to account for 14% of increase in students' academic performance.

Concurrently, 17% of the increase in students' academic performance is predicted by emotion regulation. Similarly, from the table, moral reasoning equally served as a predictor of good academic performance of students. At this point, the result is statistically significant at $t=4.37$, $p=.000$, $p<.05$. Therefore, Hypothesis 1 is rejected and result indicates significant influence of emotion regulation and moral reasoning on academic performance of students participated in the study.

Hypothesis Two: There is no significant difference in emotion regulation between Boarding and Day Senior Secondary School Students in Ado Ekiti.

Table 3: *t-test Analysis for Differences in Emotion Regulation between Day and Boarding Students*

School Type	N	M	t-value	df	p-value
Day	196	70.50	6.348	320	0.00
Boarding	126	58.61			

In Hypothesis 2 we deduced the fact that the t-calculated is 6.348, p -value 0.00 at degree of freedom 320 and level of significance 0.05. The p -value is therefore less than the level of significance of 0.05. The null hypothesis is hereby rejected, meaning that there is a significant difference in measures of emotion regulation between day and boarding senior secondary school students participated in the study.

Hypothesis Three: There is no significant difference in moral reasoning between Boarding and Day Senior Secondary School Students in Ado Ekiti.

Table 4: *t-test Analysis for Differences in Moral Reasoning Between Day and Boarding Students*

School Type	N	M	t -value	df	p -value
Day	196	60.33	-3.928	320	0.00
Boarding	126	67.38			

In Hypothesis 3 we deduced the fact that the t-calculated is -3.928, p -value 0.00 at degree of freedom 320 and level of significance 0.05. The p -value is therefore less than the level of significance of 0.05. The null hypothesis is hereby rejected, meaning that there is a significant difference in measures of Moral Reasoning between day and boarding senior secondary school students.

Discussions

From the foregoing findings, the notion that moral reasoning do significantly contribute towards students' academic performance is established. This is in line with older findings as reported by Mehraban et al. (2023) that some cross-sectional studies assessed that 50% of variance in moral reasoning can be explained by formal education. However, this finding contradicts the submission of Sánchez-Álvarez et al. (2020), whose findings show that no statistically significant link exists between moral judgment scores and GPA, linking academic performance to critical thinking rather than moral reasoning. Xue et al. (2023) also found the influence of education on moral reasoning as significant rather than moral reasoning on education. Eremie and Nwagbogwu (2018) also found that moral sensitivity does not indicate any influence on male and female students' academic achievement. It is to be noted that recent researches with the exception of this one are mostly finding non-significant relationship between moral reasoning and academic performance. This may be due to increasing relativity of morality and the fact that there are still dearths of local researches on the extent to which moral reasoning influences academic performance, especially among senior secondary school students mostly in the prime age of adolescence.

As for emotion regulation, in which a 14% of variance in academic performance was found to be possibly explained by it, the finding corroborates many other studies. Gumora and Arsenio (2020) also found that emotion regulation, general affective dispositions, and academic affect were related to each other, and that each of these variables also made a unique significant contribution to students' GPA, over and above the influence of other cognitive contributors. Khan & Jameel (2024) reported that emotion regulation was positively associated with teacher reports of children's academic success and productivity in the classroom and standardized early literacy and math achievement scores. Kwon et al. (2017) examined emotional expressivity (i.e., happiness, sadness, and anger) and emotion regulation (regulation of exuberance, sadness, and anger) as they relate to academic functioning (motivation, engagement, and achievement). Emotion regulation was positively associated with multiple aspects of academic functioning; it was also indirectly associated with achievement through engagement. It is also a reality that many contemporary studies have found a significantly negative correlation between emotion dysregulation (conceptually opposite of emotion regulation) and academic attainment; studies by Zhoc et al. (2020), Estrada et al. (2021) revealed that 49-71% of poor academic performance of senior secondary school students in can be explained by emotion dysregulation. The same emotion dysregulation is also predicted to account for 49% of decline in students' academic performance among primary school pupils.

This study also investigated differences in moral reasoning and emotion regulation between boarding and day senior secondary school students and found significant differences in the two variables between boarding and day students. In all, boarding students expressed stronger emotion regulation and a high sense of moral reasoning than day students. Although this may appear debatable, it is a testing ground for advocates of day and boarding schools in a time where governments pretend to be cash-strapped and no longer able to take care of more boarding students to investigate further. This finding may also assist parents in making decisions on whether to take their wards to either boarding or day senior secondary schools. However, with the regulated nature and somewhat independent nature of boarding schools where students undergo years of guided life and are prepared for independent self-regulated learning, life, and environments, there is no wonder if students therein are more emotionally self-regulated and

reasoned more morally inclined than students under the tutelage, attachment, and cover of parents and guardians.

Despite the challenges bordering on this study, mostly that have to do with access and moral relativism, the fact that emotion regulation and moral reasoning are found to significantly contribute to academic performance of senior secondary students adds vitality and credence to the Kohlberg stage theory of moral reasoning as well as the situation-attention-analysis-response process theory of emotion regulation. As the finding on moral reasoning challenges many other contradicting findings, it attests to the socio-cultural norm of the society where reciprocal mutual respect between students and teachers is highly accepted as a moral issue. This is in addition to the highly venerated assumption that teachers as epitomes of knowledge exemplify moral issues and enforce morality, demureness, and decorum among the students in addition to strict adherence to religious dogmas. These issues contributed immensely to emotion regulation, moral reasoning, and ultimate academic performance

Conclusion

The study investigated the extent to which the duo of emotion regulation and moral reasoning influence academic performance of senior secondary school students in Ado Ekiti Metropolis of Ekiti State, Nigeria. Based on the findings of the study, the following conclusions are hereby made:

- a. That at the individual level, 17% of good academic performance of senior secondary school students can be explained by students' ability to regulate emotions, while another 14% of students' academic performance can be explained by students' moral reasoning.
- b. There is a significant difference in emotion regulation between boarding and day senior secondary school students.
- c. There is a significant difference in moral reasoning between boarding and day senior secondary school students.

Recommendations

The study therefore recommends:

1. Teachers and parents should assist students to inculcate excellent emotion regulation strategies.
2. Parents and teachers should also ensure exemplary moral conduct and propriety among students.
3. Day schools should work hard in improving the level of students' emotion regulation and moral reasoning capabilities through structured emotional support tracks.

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**ROLE OF GUIDANCE AND COUNSELLING IN ENHANCING EMPLOYABILITY
SKILLS AMONG STUDENTS IN FEDERAL COLLEGE OF EDUCATION
(TECHNICAL), POTISKUM, YOBE STATE, NIGERIA**

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ABSTRACT

This study examined the role of guidance and counselling in enhancing employability skills among students in Federal College of Education (Technical) Potiskum, Yobe State, Nigeria. Employability skills have become essential for graduates in the contemporary labour market, yet many students graduate without adequate career preparation. The study employed a descriptive survey research design. The population consisted of 1,200 NCE and degree students of the Federal College of Education (Technical), Potiskum. A sample of 200 students was selected using a simple random sampling technique. Data were collected using a researchers-designed questionnaire titled Guidance and Counselling Employability Skills Questionnaire (GCESQ). The instrument was validated by experts in Guidance and Counselling and Educational Psychology, and its reliability coefficient of 0.82 was obtained using Cronbach's Alpha method. Data were analysed using mean and standard deviation. The findings revealed that guidance and counselling services significantly contribute to the development of employability skills such as career awareness, communication skills, problem-solving skills, decision-making skills, and job search skills among students. The study further revealed that counselling services help students identify career opportunities and improve their readiness for employment after graduation. Based on the findings, the study concluded that guidance and counselling services play a vital role in preparing students for the labour market and enhancing their employability prospects. The study recommended that institutions should strengthen counselling units, provide regular career guidance programmes, and integrate employability skills training into academic programmes.

Keywords: Guidance and Counselling, Employability Skills, Career Development, Students, Technical Education.

Introduction

The contemporary labour market has become increasingly complex and competitive, requiring graduates to possess not only academic knowledge but also a wide range of employability skills that enable them to function effectively in professional environments. Across the world, higher education institutions are now expected to produce graduates who are capable of adapting to rapidly changing workplace demands. Employability skills refer to a set of transferable competencies such as communication, teamwork, critical thinking, problem-solving, leadership, adaptability, and career management that enhance an individual's ability to obtain and maintain employment (Yorke, 2016). These competencies have become essential in the twenty-first century knowledge economy, where employers increasingly demand graduates who can demonstrate practical skills and workplace readiness in addition to theoretical knowledge.

Guidance and counselling services play an important role in helping students acquire these competencies. Counselling programmes provide students with opportunities to understand their personal strengths, interests, and career aspirations while equipping them with the skills needed to navigate the labour market effectively. According to Brown and Lent (2019), career counselling helps students develop self-awareness and career decision-making abilities, which are crucial for successful career development. Through structured guidance programmes, students are able to receive information about career opportunities, labour market trends, and the skills required in various professional fields. Counsellors also assist students in developing career planning strategies and employability skills that enhance their preparedness for the world of work.

In many developing countries, including Nigeria, graduate unemployment remains a significant socioeconomic challenge. Despite the increasing number of graduates produced annually by higher education institutions, many of them struggle to secure meaningful employment. This situation is often attributed to the mismatch between the skills acquired in school and the competencies demanded by employers. Scholars have argued that many graduates lack essential employability skills such as communication, teamwork, adaptability, and problem-solving abilities, which are highly valued in modern workplaces (Okolie et al., 2020). Consequently,

there is growing recognition that educational institutions must strengthen career guidance and counselling services to bridge the gap between education and employment.

Technical and vocational education institutions have a particularly important role to play in preparing students for the labour market. Institutions such as the Federal College of Education (Technical), Potiskum are designed to produce graduates who possess both pedagogical competence and practical technical skills. The dual mandate of teacher education in technical institutions requires graduates to be capable of teaching vocational subjects while also demonstrating industry-relevant competencies. Guidance and counselling services in such institutions are therefore essential in helping students develop employability skills, explore career options, and make informed career decisions (Nwokolo & Anyamene, 2019). Through career orientation programmes, counselling units can provide students with opportunities to identify their talents, develop career goals, and prepare for employment after graduation.

Empirical studies have demonstrated that effective guidance and counselling programmes can significantly improve students' career awareness and job readiness. For example, research has shown that students who participate in structured counselling programmes tend to demonstrate higher levels of career maturity, self-confidence, and employability skills than those who do not have access to such services (Omoniyi, 2018). Counsellors help students identify their abilities and interests while providing guidance on career pathways and job search strategies. Such interventions can enhance students' ability to make informed decisions about their future careers and adapt to the evolving demands of the labour market.

The theoretical foundation of this study is anchored on Super's Career Development Theory, Super (1990) which emphasizes that career development is a lifelong process involving the growth of self-concept and career maturity. Super's theory suggests that individuals progress through different stages of career development and require guidance to make appropriate career choices and adjustments (Super, 1990). Within the context of higher education, guidance and counselling services provide the support necessary for students to explore career options, develop employability competencies and transition successfully from school to the workplace.

By helping students understand their strengths and career interests, counselling services contribute to the development of career maturity and employability readiness.

Despite the recognized importance of guidance and counselling services, many tertiary institutions in Nigeria still face challenges in effectively implementing comprehensive counselling programmes. Limited resources, inadequate staffing and low student awareness often reduce the impact of counselling services in institutions of higher learning. As a result, many students graduate without adequate preparation for the labour market. This situation raises concerns about the effectiveness of existing counselling programmes in equipping students with employability skills. It is against this background that this study investigates the role of guidance and counselling in enhancing employability skills among students in the Federal College of Education (Technical), Potiskum, Yobe State, Nigeria.

Statement of the Problem

Graduate unemployment has become a major socio-economic challenge in Nigeria despite the continuous expansion of tertiary education. Thousands of graduates are produced annually from Universities, polytechnics and Colleges of education, yet many remain unemployed or underemployed. Reports from the National Bureau of Statistics (2021) indicate that Nigeria's unemployment rate reached about 33.3%, with youth unemployment exceeding 40%. Similarly, the International Labour Organization (2020) notes that many young graduates experience difficulty transitioning from school to work due to inadequate employability skills and a mismatch between graduates' competencies and labour market expectations. Tertiary education is expected to equip students with relevant knowledge, technical competencies, and employability skills needed in the labour market. However, evidence suggests that many graduates leave school without essential skills such as communication, teamwork, problem-solving, career planning, and job search strategies.

A report by the World Bank (2014) shows that more than 60% of employers in Nigeria believe graduates lack critical soft skills and workplace readiness, despite possessing academic qualifications. This gap between educational outcomes and labour market demands has raised concerns among educators, employers, and policymakers. Guidance and counselling services in

tertiary institutions are intended to address this gap by helping students develop career awareness, identify vocational interests, and acquire employability competencies. Through career guidance, vocational counselling, and skill development programmes, counsellors are expected to assist students in understanding labour market trends and preparing effectively for employment. However, in many Nigerian institutions these services are often underutilized, poorly implemented, or constrained by inadequate resources and limited professional counsellors. In technical institutions such as the Federal College of Education (Technical) Potiskum in Yobe State, students are expected to acquire both pedagogical and technical competencies under the dual mandate of teacher education and vocational training. Nevertheless, concerns remain that some students graduate without adequate employability preparation. It is in light of this situation that the study examines how guidance and counselling services contribute to the development of employability skills and how effectively they prepare students for successful transition into the labour market.

Objectives of the Study

The objectives of this study are to:

1. Examine the role of guidance and counselling services in developing employability skills among students in Federal College of Education (Technical), Potiskum.
2. Determine the extent to which counselling programmes enhance students' career awareness and job readiness.

Research Questions

1. What role do guidance and counselling services play in developing employability skills among students in Federal College of Education (Technical), Potiskum?
2. How does counselling programmes enhance students' career awareness and job readiness?

Methodology

The study employed a descriptive survey research design because it enabled the researcher to collect data from respondents in order to describe their perceptions regarding the role of guidance and counselling in enhancing employability skills among students. Descriptive survey design allows researchers to gather quantitative data through instruments such as questionnaires

and analyze the responses statistically to identify patterns and trends within a population. According to Creswell and Creswell (2018), survey research provides a systematic procedure for collecting numerical data from a sample of a population in order to describe opinions, attitudes and behaviours. The population of the study consisted of 1,200 NCE and degree students in Federal College of Education (Technical), Potiskum. A sample of 200 students was carefully selected using the simple random sampling technique, Data were collected using a structured questionnaire titled Guidance and Counselling Employability Skills Questionnaire (GCESQ). The instrument consisted nine items measuring the role of counselling in employability skills development and Career awareness and job readiness. A 4-point modified Likert scale was used: Strongly Agree (4), Agree (3), Disagree (2) and Strongly Disagree (1). Data collected were analysed using mean and standard deviation. The decision rule was $\text{Mean} \geq 2.50 = \text{Agree}$ while $\text{Mean} < 2.50 = \text{Disagree}$.

Results

Research One: What role do guidance and counselling services play in developing employability skills among students in Federal College of Education (Technical), Potiskum?

Table 1: Role of Guidance and Counselling in Developing Employability Skills

Item	Statement	Mean	SD	Decision
1	Guidance services help students identify career opportunities	3.42	0.71	Agree
2	Counselling programmes improve students' communication skills	3.35	0.76	Agree
3	Counselling services help students develop problem-solving skills	3.21	0.83	Agree
4	Career counselling improves decision-making ability	3.28	0.79	Agree
5	Counselling programmes prepare students for job interviews	3.31	0.75	Agree

The results presented in Table 1 show that all items obtained mean scores above the benchmark value of 2.50, indicating that respondents generally agreed that guidance and counselling services significantly contribute to the development of employability skills among students. Specifically, the highest mean score was observed for the item on helping students identify career opportunities ($M = 3.42$, $SD = 0.71$), while other items such as improving communication skills ($M = 3.35$, $SD = 0.76$), developing problem-solving skills ($M = 3.21$, $SD = 0.83$), enhancing decision-making ability ($M = 3.28$, $SD = 0.79$), and preparing students for job

interviews ($M = 3.31$, $SD = 0.75$) also recorded strong agreement. These findings suggest that students perceive guidance and counselling programmes as effective tools for acquiring both personal and professional competencies that are essential for successful career development.

Research Two: To what extent do counselling programmes enhance students' career awareness and job readiness?

Table 2: Counselling Programmes and Students' Job Readiness

Item	Statement	Mean	SD	Decision
1	Counselling programmes increase students' career awareness	3.40	0.72	Agree
2	Guidance services improve students' job search skills	3.33	0.81	Agree
3	Counselling programmes help students prepare for employment	3.29	0.77	Agree
4	Career guidance improves students' confidence in the labour market	3.37	0.74	Agree

Table 2 presents the extent to which counselling programmes enhance students' career awareness and job readiness. As shown, all items recorded mean scores above the benchmark value of 2.50, with values ranging from 3.29 to 3.40. This indicates that the respondents generally agreed that counselling programmes positively influence their employability skills. Specifically, students perceive that counselling programmes increase career awareness ($M = 3.40$, $SD = 0.72$), improve job search skills ($M = 3.33$, $SD = 0.81$), assist in employment preparation ($M = 3.29$, $SD = 0.77$), and boost confidence in the labour market ($M = 3.37$, $SD = 0.74$). These findings suggest that guidance and counselling interventions provide students with critical knowledge, skills, and confidence needed to navigate the job market effectively.

Discussion of Findings

Research question one revealed that guidance and counselling services help students develop employability skills such as communication, problem solving, and decision making suggests that students perceive counselling as instrumental in acquiring competencies necessary for effective performance in the workplace. In this study, respondents agreed that guidance and counselling contributed to skills that are widely recognized as core employability attributes. This result aligns with the human capital development perspective, which posits that educational interventions enhance individuals' skills and capabilities, thereby increasing their productivity and employability (Becker, 1993). Under this theoretical lens, guidance and counselling are not

merely supportive services but strategic developmental processes that build cognitive and soft skills essential for career success.

Empirical studies support this finding. For example, Oki (2018) reported that students who participated in structured counselling programmes demonstrated significant improvements in communication skills and problem-solving capacity compared to those who did not access such services. Similarly, Adejumo and Oladipo (2017) found that guidance and counselling interventions positively influenced students' decision-making abilities, enabling them to make informed career choices and effectively navigate job search processes. These studies corroborate the present finding that counselling services contribute to the enhancement of key employability skills.

However, some research offers a contrasting view. Ibrahim and Olorunfemi (2019) observed that while counselling programmes increased students' awareness of their skills gaps, the direct impact on measurable skill improvement was limited when such programmes were not integrated with practical experiences like internships or skills workshops. This suggests that guidance and counselling alone may not be sufficient unless complemented by experiential learning opportunities.

Research questions two revealed that counselling programmes enhance students' career awareness and job readiness indicates that students perceive these interventions as valuable in equipping them with knowledge, skills, and confidence necessary to navigate the labour market effectively. Specifically, counselling programmes appear to improve students' understanding of career opportunities, clarify career goals, and provide guidance on job search strategies, thereby fostering readiness for employment. This result aligns with the theoretical perspective of Social Cognitive Career Theory (SCCT), which posits that self-efficacy, outcome expectations, and goal-setting are central to career development (Lent, Brown, & Hackett, 1994). Counselling programmes that build students' confidence and inform their career choices enhance self-efficacy, which, in turn, strengthens their preparedness and adaptability in the job market. Empirical evidence supports this finding. Adejumo and Oladipo (2017) reported that students

who participated in structured counselling programmes demonstrated increased career awareness and greater preparedness for job-seeking activities such as interviews and resume writing.

Similarly, Eze and Okafor (2019) found that guidance and counselling interventions significantly improved students' ability to identify suitable career paths, set realistic goals, and acquire the skills required for effective job performance. These studies suggest that counselling programmes not only inform students about career options but also provide practical support that enhances employability outcomes. Conversely, some studies suggest that the effectiveness of counselling programmes may be moderated by the availability of experiential learning opportunities. Ibrahim and Olorunfemi (2019) observed that while counselling improved students' awareness, actual job readiness outcomes were limited when interventions were purely theoretical and not reinforced through internships, workshops, or mentorship schemes. This underscores the need for counselling programmes to be complemented by hands-on career exposure to maximize their impact on employability.

Conclusion

The study concludes that guidance and counselling services play an important role in enhancing employability skills among students in tertiary institutions. Counselling programmes provide career information, skill development opportunities, and support that enable students to prepare effectively for the labour market.

Recommendations

The following recommendations were put forward based on the findings of the study:

1. Educational institutions, particularly school administrators and management, should allocate adequate resources including trained personnel, funding, and facilities to strengthen guidance and counselling units. This will enable counsellors to provide continuous support and individualized career guidance to all students.
2. School guidance counsellors, in collaboration with departmental heads, should plan and conduct regular career guidance programmes and workshops for students. These programmes should include seminars, group counselling sessions, and interactive career talks to enhance students' career awareness and job readiness.

3. Curriculum planners and education policymakers should incorporate employability skills training into existing academic programmes. This can be achieved by embedding modules on communication, problem-solving, teamwork, and job-search skills into relevant courses so that all students acquire these competencies as part of their formal education.
4. Guidance counsellors, supported by institutional management, should establish partnerships with industries, businesses and professional organizations to provide students with practical career exposure. This can include internships, job shadowing, career fairs and mentorship programmes, enabling students to gain first-hand experience and insight into workplace expectations.

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IMPACT OF SECURITY AND SAFETY MEASURES IN PUBLIC SENIOR SECONDARY SCHOOLS, BORNO STATE, NIGERIA

BY

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ABSTRACT

The study examines the impact of security and safety measures in public senior secondary schools in Borno State, Nigeria. The study was guided by three objectives and three research questions. Descriptive survey research design was adopted for the study. The population of the study was 3000 final year students drawn from senior secondary schools in Maiduguri Metropolitan. Stratified random sampling technique was used to select the sample from the population. In all, 600 students (20% of 3,000 students) were sampled for the study. Researcher designed questionnaire was developed and validated by experts in Educational Administration and Planning as well as Measurement and Evaluation units, Faculty of Education, University of Maiduguri. The logical validity of index was 0.75. The instrument was also pilot-tested using test-retest method and was analyzed and the reliability index was 0.82. Frequency count and percentage were used to analyze the data. The study finding showed that effective security and safety measures improve students' attendance and enhances teachers' performance by reducing fear and stress, and create a more conducive teaching and learning environment. It also reduces vandalism and builds community confidence in the school system. However, the challenges such as inadequate funding, poor maintenance, and lack of trained personnel limit the effectiveness of these measures. The study concludes that security and safety measures have a significant positive impact on school functioning, but their success depends on consistent implementation, community participation, and government support. It was recommended among others that the school management and the host communities should see security and safety measures as a shared responsibility.

Keywords: Security, Safety, and Measures

Introduction

Education is a social process that brings positive change in the behaviour, character and knowledge of the students, citizens and the entire nation Adebayo (2020). The North-East region encompassing Adamawa, Bauchi, Borno, Taraba, and Yobe, continue suffer from persistent insecurity. Measures like perimeter fencing, security personnel, visitor control, emergency drills,

and safe infrastructure are essential for protecting students, teachers, and school property. This is why a responsible government invests heavily in the education of its citizens and this investment is noticed in the establishment of schools with adequate infrastructural facilities and their maintenance for achieving educational goals (Abanobi, 2022). School is a place where learners come together to acquire knowledge, values, skills. School is designed to provide learning spaces and learning environment for teaching of students under the direction of teachers. However, for teaching and learning to effectively take place in the school, there must be an effective school management with adequate security and safety measures to secure lives and properties. Security is a necessary precondition for development of human beings and the nation. Realizing the need for security as a basic condition for the survival of the society and the people, the constitution of Federal Republic of Nigeria as provided in section 14(1) (b) that the security and welfare of the people shall be the primary purpose of the government. This assignment has been insubstantially dis-charged, judging the high levels of insecurity in the state and country as a whole (Ibrahim, 2021). Our society today is highly plaque by various forms of insecurity especially in our secondary schools and there is need to tackle them in order to promote and protect human beings and societal development. This high rate of insecurity has so much spread down to our secondary education system with grave consequences especially in the areas of teaching and learning which this has brought a great source of concern among educators and stakeholders. Secondary education system is that level of education that lays between the primary and tertiary levels of education its objective is to prepare the youths to acquire basic education and skills for self-employment and happy adult life as well as preparation for university education.

Recently the crises of violence and extremism have been on the increase in both tertiary and secondary levels of education. Also, political and tribal crises have contributed to the growing cases of cultism, theft and other forms of insecurity activities within and around our schools. The existence and activities of Boko-Haram and ISWAP insurgency, farmer-herder conflicts, steal and other violent activities are no longer new to our communities where our schools are located. All these have led to closing down of schools in some of our senior secondary schools in Borno State, Nigeria. Also, the state of infrastructures in our public schools have contributed to insecurity in the schools, due to lack of perimeter fencing, security personnel, visitor control,

iron gates, and other security measures that may help protect lives and properties within the school and environment, these have greatly affect the students' school attendance, poor teachers' job performance, and poor conducive teaching and learning environment in schools.

Statement of the Problem

Public Secondary Schools in Borno State, Nigeria have become deport or centers for insecurity activities due to its dilapidated state and porous nature which has posed a serious threat to students, teachers, other workers and host communities. Security challenges such as armed banditry, kidnapping, killings by herds men, abduction of students by Boko-Haram and ISWAP, religious fanatics, communal crises which are on the increase have now become a great worry and concern to the school management and stakeholders as teaching and learning are being disrupted regularly (Mune and Kalam, 2021). All efforts by the school management to put an end were proved abortive. Observation have shown that absence of CCTV cameras, visitors' book at the gate entrance, high perimeter fencing, well trained security personnel have also posed great threats to the school's insecurity in Borno State Senior Secondary Schools in Nigeria. This could be noticed in the regular closure of schools which led to high rate of kidnapping, stealing, cyber-crime and school drop outs. This gap becomes a problem as students in Borno State, Nigeria could not be exposure to adequate teaching and learning process, poor students' school attendance, teachers' job low performance. This study therefore, is set to examine impact of security and safety measures in Public Senior Secondary Schools in Borno State, Nigeria.

Objectives of the Study

The following objectives guided the study.

1. To assess the impact of security and safety measures on students in senior secondary schools, Borno State;
2. To examine the impact of security and safety measures on teachers in senior secondary school, Borno State; and
3. To identify challenges facing the implementation of security and safety measures in senior secondary schools, Borno State.

Research Questions

The following research questions guided the study:

1. What is the impact of security and safety measures on students in senior secondary schools, Borno State?
2. How does security and safety measures influence teachers in senior secondary schools, Borno State?
3. What challenges hinder the implementation of security and measures in public senior secondary schools in Borno State, Nigeria?

Methodology

The study adopted descriptive survey research design. The population of the study was 3000 final year students drawn from senior secondary schools in Maiduguri Metropolitan. Stratified random sampling technique was used to select the sample from the population. In all, 600 students (20% of 3,000 students) were sampled for the study. Researcher-designed questionnaire was developed and validated by experts in Educational Administration and Planning as well as Measurement and Evaluation units, Faculty of Education, University of Maiduguri. The logical validity of index was 0.75. The instrument was also pilot-tested using test-retest method and was analyzed and the reliability index was 0.82. Frequency count and percentage were used to analyze the data.

Result

Research Question One: What is the impact of security and safety measures on students in senior secondary schools, Borno State?

Table 1: Frequency and Percentage Count on Impact of Security and Safety Measures on Students in Senior Secondary Schools in Borno State, Nigeria

Items	Agree		Disagree		Total N	%
	F	%	F	%		
Security measures have increased Students regular attendance in schools	308	51	292	49	600	100
Parents are more willing to send their children to schools because of safety	450	75	150	25	600	100
Safety measures have reduced students' dropout rate	418	70	182	30	600	100

Table 1 shows that security and safety measures have impact on students' attendance in schools.

Research Question Two: How does security and safety measures influence teachers in senior secondary schools, Borno State?

Table 2: Frequency and Percentage Count on Impact of Security and Safety Measures on Teachers in Senior Secondary Schools in Borno State, Nigeria

Items	Agree		Disagree		Total N	%
	F	%	F	%		
I feel safe teaching in my school because of security measures in place	420	70	180	30	600	100
Security measures reduce my fear and stress at work	450	75	150	25	600	100
I am more motivated to perform my duties because I feel protected	418	70	182	30	600	100
Safety measures enable me to focus better on teaching	540	90	60	10	600	100

The results in table 2 revealed that senior secondary school students agreed that security and safety measures have impact on teachers' performance in schools.

Research Question Three: What challenges hinder the implementation of security and measures in senior secondary schools in Borno State, Nigeria?

Table 3: Frequency and Percentage Count on Challenges hinder the implementation of Security and Safety Measures in Senior Secondary Schools in Borno State, Nigeria

Items	Agree		Disagree		Total N	%
	F	%	F	%		
Inadequate funding limit the provision of security facilities	540	90	60	10	600	100
Security equipment is poorly maintained in my school	450	75	150	25	600	100
There are not enough trained security personnel in my school	418	70	182	30	600	100
The community is not adequately involved in school safety	540	90	60	10	600	100

The table 3 above indicated that the challenges identified above are actually hindering the implementation of security and measures in senior secondary schools in Borno State, Nigeria.

Discussion

The study finding reveals that security and safety measures have impact on students' attendance in schools. This is because the study reveals that participants agreed that security and safety measures have impact on students' attendance in their schools. The study finding also revealed that parents do send their children more to schools where security and safety measures were put in place. However, the study also showed that where security and measures were in place it uses to reduce dropout of students. As such, the response of the respondents generally showed that security and safety measures have impact on students' attendance in schools. This finding is in agreement with that of the position of Kester (2010) who asserted that if relevant security measures are not being adopted for managing security issues in secondary schools, the students' attendance will be low.

The answer to research question 2 above shows that security and safety measures have significant impact on teachers' performance in senior secondary schools in Borno state. This is because the result finding revealed that teachers feel safe teaching in school because of security measures in place and security measures reduce their fear and stress at work and also enable them to focus better in teaching. This finding is in line with the recommendation of Ezeoba (2012) and Kester (2010) who stated that if secondary schools are not adopting modern security measures needed for tackling security challenges, teachers' performance will be low, teachers' fear and stress at work will increase, aside they will not be motivated to perform their duties and their attention on teaching will be discouraged.

The findings in table three also revealed that the challenges identified above are actually hindering the implementation of security and measures in senior secondary schools in Borno State, Nigeria. This is because the majority of the respondents agreed that items identified in table three are actually hindering the implementation of security and safety measures in their schools. This finding agrees with Nwankwo and Okogbue (2022) view that majority of public schools in Nigeria have no perimeter fencing, iron gates, technological devices (CCTV camera), burglary proof, doors and windows and absence of armed security agents due to funding, poor maintenance of security equipment, lack of security personnel and inadequate involvement of community people in security and safety measures of the schools.

Conclusion

The study looks at impact of security and safety measures in public senior secondary schools in Borno State and established that security and safety measures have significant positive impact on public senior secondary schools in Borno State.

Recommendations

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

1. Students should obey safety rules, use designated gates, and avoid isolated areas, more importantly they should participate in security and safety measures clubs and drills.
2. Teachers need to be vigilant and report suspicious persons, bullying or hazards immediately and also ensure integrate security and safety measures education into morning assembly and civic education lesson.
3. The State government should prioritize reconstruction and furnishing of schools destroyed by insurgency and all stakeholders should see school security and safety measures as a shared responsibility.

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**INFLUENCE OF SCHOOL-BASED MANAGEMENT COMMITTEES ON THE
MANAGEMENT OF SCHOOL-COMMUNITY RELATIONSHIP AND DECISION
MAKING IN PUBLIC SECONDARY SCHOOLS IN NORTH-CENTRAL ZONE,
NIGERIA**

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ABSTRACT

This study investigated the Influence of School-Based Management Committees on the Management of School-Community Relationship and Decision Making in Public Secondary Schools in North-Central Zone, Nigeria. The study was conducted with two objectives among which were to: assess the influence of School-Based Management Committees on School-Community Relationship; and examine the influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria. In line with the stated objectives, two research questions and two null hypotheses were asked and formulated, respectively. The study adopted descriptive survey research design. The population of the study was Fifty Thousand Two Hundred and Thirteen (50,213). The sample size was Three Hundred Eighty Four (384) based on research advisors (2006). Proportionate sampling was used to select the sample. The research questions were answered using Statistical Package for Social Science (SPSS) presented in tables and mean scores. The Two null hypotheses were tested using One Way Analysis of Variance (ANOVA) at 0.05 level of significance. The findings, among others, revealed that School-Based Management Committees had influence on School-Community Relationship in Secondary Schools in North-Central Education Zone, Nigeria. Also, SBMCs ensured proper harmonious relationship between the school and the host communities. Recommendations have been made, which include, among others, that School-Based Management Committees. (SBMCs) and school management should continuously maintain harmonious relationship between them in order to encourage the community members provide security to protect life and properties through vigilante operatives in the entire Secondary Schools in the Zone.

Keywords: School-Based Management Committees, School-Community Relationship, Decision Making Process

Introduction

The SBMC is a medium that promotes school-community relationship and decision making process to enhance school governance, and improve the equality, efficiency and

effectiveness of teaching and learning towards the achievement of goals and objectives in the secondary education. Proponents of School-Based Management Committees (SBMCs) argue that increasing the involvement of stakeholders in education will increase schools capacity and strengthen school ownership and accountability (Millet, 2011) cited by Muhammad, Bukar and Ali (2025). Every public secondary school has such a committee constituted based on the states agreement for the formation and operation of the SBMC, in order to improve teaching and learning for the accomplishment of set objectives in different schools. The implementation of the SBMC policy in schools bridge the gap between policy makers and local education stakeholders and create a sense of community ownership of schools that facilitate the working together of several stakeholders in school management, based on regulation, with elected but voluntary membership.

School Based Management Committee (SBMC) promotes positive relationships between the school and the community for peaceful coexistence and the mobilization of community support for the schools needs and advocacy for educational initiatives in alignment of educational policies with the cultural context of the community to enhance the quality of education and promote community development (Robert, 2018.). It is aimed to close the existing gab between schools and community in order to maintain set standards and quality of teaching and learning in schools. Ayeni and Ibukun (2013), observed that the SBMC in the governance of school promotes relationship between the school administration and the community, which is vital in promoting stakeholder participation in setting standards, ensuring efficient utilization of resources with the ultimate goal of achieving quality education in schools.

The involvement of the SBMC in school management enhances the sustainable inter-dependent relationship between a school and community by promoting good value system and that recognizes the cooperation, participation and support of relevant stakeholders in the management of school resources. Such dynamic relationship strengthens the community intervention and mandate in education and instills a sense of collective ownership, responsibility and commitment to the progress of the school programmes, activities, development of physical structures, learning facilities and improvement in learning outcome (Robert, 2018). It helps to maintain good and peaceful working conditions of staff members, students and community members to improve the school-community relationship in secondary education in North-

Central, Zone. School- community relationship is a genuine co-operation in planning and working for the benefit of the school within the public giving ideas, resources and effect team work for the utilization of educational and institutional goals of both the community and school. School-community relations involve series of activities and media through which the school seeks to learn more about the purpose, programmes, problems and the needs of the school. Ayeni and Bamire (2022), opined that effective school-community relationship will no doubt strengthen institutional management and school effectiveness; promote community's strong commitment to the provision of adequate teaching and learning materials/facilities, conducive working environment, staff and students welfare, and cordial interpersonal relationship; effective curriculum implementation and quality learning outcome in secondary schools.

Decision-making process is a shared responsibility among the school administrators, teachers, students and community members for the improvement of school management towards effective teaching and learning in the schools. Decision-making is a conscious choice made between two or more competing alternatives.

Decision making process, which involved guardians, teachers, school management and community members in the SBMCs with diversity of views and expertise as inputs to decision-making ensures proactive action on significant matters that reflect the needs and aspirations of the students for achieving the goal and objectives of the secondary school education. Robert (2018), stressed that decision-making that involves the parents and community members and school administrators has enhanced decision-making at school level, which has led to efficient implementation of education programmes in many countries.

Statement of the Problem

The conditions of Public Secondary Schools and learning outcomes of students in North Central Education Zone, Nigeria, have been great sources of concern for parents, educators, principals, teachers, students and the general public in the communities. Several factors have been attributed to this at one point in time or the other. The community members see school properties as public properties which they have no interest in. insecurity challenges being experienced in schools and lack of peaceful coexistence between the school and community members may result from the widening gaps of school-community relationship in the schools. The lack of proactive decision

making process in the schools, most especially on issues that concern school administration, planning, policy making, decisions on financial management of schools and then on compliance to the decisions agreed by law especially with regards to the interest of the members of the school leaders and the misunderstanding among members of staff, students and members of the community, may be due to the poor involvement of SBMC members in decision making process in the schools.

Objectives of the Study

Specifically, the study was set to:

1. assess the Influence of School-Based Management Committees on School-Community Relationship in Secondary Schools in North-Central Zone, Nigeria; and
2. ascertain the Influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria.

Research Questions

The research questions raised for this study are as follows:

1. In what ways do School-Based Management Committees influence School-Community Relationship in Secondary Schools in North-Central Zone, Nigeria? and
2. How do School-Based Management Committees influence Decision Making Process in Secondary Schools in North-Central Zone, Nigeria.

Null Hypotheses

The study formulated and tested the following hypotheses:

- H0₁:** there is no significant Difference in the Opinions of Principals, Teachers and SBMC Officials (respondents) on the Influence of School-Based Management Committees on School-Community Relationship in Secondary Schools in North-Central Zone, Nigeria; and
- H0₂:** there is no significant Difference in the Opinions of Respondents on the Influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria.

Methodology

This study used descriptive survey research design. The Population of the study was 50213,

which comprised 1817 principals, 37494 teachers and 10902 SBMC Officials in all public Secondary Schools in the North-Central States. The sample size of the study was 384 respondents, which comprise 27 principals, 278 teachers and 79 SBMC Officials. The instrument used in this study was Structured Questionnaire with Seventy (70) items which were generated on a Five (5) Point Likerts scale: The scale ranges from strongly agreed, agreed, undecided, disagreed and strongly disagreed options. Information collected, through the questionnaire, was analyzed using the Descriptive Statistics (frequency counts and mean scores) were used to respond to issues in the questionnaire. One Way Analysis of Variance (ANOVA) was used to test the null hypotheses at 0.05 significant level.

Results

A total number of Three Hundred and Eighty One (384) copies of the questionnaire were distributed and Three Hundred and Seventy-Seven (377) were successfully completed and returned. Weighed mean was used to answer the research questions. In answering research questions, a mean score of 3.0 was set as a benchmark and above indicated the acceptance.

Research Question One: In what ways do School-Based Management Committees influence School Community Relationship in Secondary Schools in North-Central Zone, Nigeria?

Table 1: Opinions of Respondents on the Influence of School-Based Management Committees on School Community Relationship in Secondary Schools in North-Central Zone, Nigeria

S/N	Items statement	Mean	Remarks
1.	SBMC ensures harmonious relationship between the school and community.	4.00	Agreed
2.	Through the efforts of SBMC, conflict between principals, teachers and non-teaching staff are resolved in the school.	3.97	Agreed
3.	The involvement of SBMC in school encourages the community provide security to protect life and properties through its vigilante operatives.	3.80	Agreed
4.	SBMC ensures that school allows community to share its sport/games facilities	3.93	Agreed
5.	SBMC ensures that community allows school to use its health facilities.	3.90	Agreed
6.	SBMC helps the school to invite members of the community to its cultural activities.	3.50	Agreed
7.	The efforts of SBMC enable community to invite the school to its cultural activities.	3.83	Agreed

8.	SBMC ensures that community allows school to use its water facilities.	3.70	Agreed
9.	The efforts of SBMC enable community to give houses for rent to staff of school at cheap rate.	3.70	Agreed
10.	The involvement of SBMC promotes stakeholders commitment and sense of ownership for the efficient delivery of education services in this school	3.80	Agreed
Cumulative Mean		3.81	

Decision Mean 3.0

Table 1 revealed the opinions of respondents on the influence of School-Based Management Committees School Community Relationship in Secondary Schools in North-Central Zone, Nigeria. Item 1 stated that SBMC ensures harmonious relationship between the school and community in secondary schools with an average of 4.00 respondents indicated that the statement was accepted. Item 2 showed that through the efforts of SBMC, most conflict between principals, teachers and non-teaching staff were resolved in the secondary schools; with mean response of 3.97, which shows acceptance of the statement. Item 3 tried to find out whether the involvement of SBMC in school has encouraged the community to provide security to protect life and properties through its vigilante operatives in the secondary schools with-mean of 3.80 respondents indicated acceptance to the statement. Item 4 showed that SBMC ensures that school allows community to share its sport/games facilities with the mean response of 3.93 which shows acceptance of the statement. Item 5 stated that SBMC ensures that community allows school to use its health facilities with the mean response of 3.90 which agreed with the statement. Item 6 states that SBMC helps the school to invite members of the community to its cultural activities with the mean of 3.50 respondents which indicated acceptance of the statement. Item 7 states that the efforts of SBMC enable community to invite the school to its cultural activities with the mean response of 3.83, which shows acceptance of the statement. Item 8 was on whether SBMC ensures that community allows school to use its water facilities to which 3.70 mean score of respondents indicated that the statement was accepted. Item 9 stated that the efforts of SBMC enable community to give houses for rent to staff of school at cheap rate; with mean response of 3.70, which shows acceptance of the statement. Item 10 found out if the involvement of SBMC promoted stakeholders commitment and sense of ownership for the efficient delivery of education services in most schools with the mean response of 3.80, which

agreed with the statement. The cumulative mean of 3.81, which is above the decision mean showed the respondents acceptance of the statements.

Research Question Two: How do School-Based Management Committees influence Decision Making Process in Secondary Schools in North-Central Zone, Nigeria?

Table 2: Opinions of Respondents on the influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria

S/N	Items statement	Mean	Remarks
11.	SBMC encourages parents, teachers, students and the community to take part in decision making process in this school.	3.80	Agreed
12.	SBMC takes decision on how the school should be run.	3.60	Agreed
13.	With SBMC, all stakeholders in the school take part in School Development Plan (SDP) where good decisions are made.	3.57	Agreed
14.	SBMC supports students view when matters related to them are discussed in this school.	3.60	Agreed
15.	SBMC ensures that decisions arrived at meetings are documented and recorded appropriately.	3.53	Agreed
16.	SBMC ensures that decisions made during meetings are communicated to all relevant stakeholders.	4.07	Agreed
17.	SBMC encourages the authority of this school to take unilateral actions on crucial issues.	3.73	Agreed
18.	SBMC ensures that decision making process is democratized in this school.	3.83	Agreed
19.	With SBMC, decisions made during meetings are binding on every member of the school community.	3.67	Agreed
20.	SBMC ensures that influence peddling in terms of decisions made is not welcome in this school.	3.63	Agreed
Cumulative Mean		3.70	
Decision Mean 3.0			

Table 2 revealed the influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria. Item 11 stated that SBMC encourages parents, teachers, students and the community to take part in decision making process in this school; with the mean of 3.80 respondents indicated acceptance of the statement. Item 12 states that the SBMC takes decision on how the school should be run with the mean response of 3.60 which shows acceptance of the statement. Item 13 stated that through SBMC;

all stakeholders in the school take part in School Development Plan (SDP) where good decisions are made; with an average of 3.57 respondents indicated that the statement was accepted. Item 14 states that SBMC supports students view when matters related to them are discussed in this school with the mean of 3.60 respondents indicated acceptance of the statement. Item 15 stated that SBMC ensures that decisions arrived at meetings are documented and recorded appropriately with mean of 3.53, which respondents indicated acceptance to the statement. Item 16 was on whether SBMC ensures that decisions made during meetings are communicated to all relevant stakeholders; with the mean response of 4.07, which agreed with the statement. Item 17 stated that SBMC encourages the authority of this school to take unilateral actions on crucial issues with mean of 3.73 respondents indicated acceptance to the statement. Item 18 states that the SBMC ensures that decision making process is democratized in this school with mean response of 3.83, which shows acceptance of the statement. Item 19 stated that decisions made during meetings are binding on every member of the school community with an average of 3.67, respondents indicated that the statement was accepted. Item 20 was to find out if SBMC ensures that influence peddling in terms of decisions made is not welcome in this school with mean of 3.63, respondents indicated acceptance to the statement. The cumulative mean of 3.70, which is above the decision mean showed the respondents acceptance of the statements.

Hypothesis One: There is no Significant Difference in the Opinions among Principals, Teachers and SBMC Officials (Respondents) on the Influence of School-Based Management Committees on School-Community Relationship in Secondary Schools in North-Central Zone, Nigeria

Table 3: Summary of Analysis of Variance (ANOVA) in the Perceptions of Respondents on the Influence of School-Based Management Committees on School-Community Relationship in Secondary Schools in North-Central Zone, Nigeria

Source of Variation	Sum of Square	Df	Mean of Square	F-cal	F-critical	P-value	Decision
Between Group	4.008	2	5.518	0.469	5.158	0.71	H ₀₁ Retained
Within Group	3382.917	375	1.817				
Total	5386.926	377					

As shown in Table 3, if the P-value is less than the level of significance, the hypothesis is rejected, but if otherwise, it is retained. The calculated F-cal (0.469) is less than the critical value (5.158), while the P-value (0.071) is greater than the significant level of 0.05, which indicates

that there was no significant difference in the perceptions of respondents on perceptions of stakeholders on the Influence of School Based Management Committees on school community - relationship in secondary schools in North-Central Zone, Nigeria. The P-value (0.071) is greater than the significant level of 0.05, which indicates that the Null hypothesis (**H0₁**) is hereby retained.

Hypothesis Two: There is no Significant Difference in the Opinions Among Principals' Teachers and SBMC Officials, (Respondents) on the Influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria

Table 4: Analysis of Variance (ANOVA) in the Perceptions of Respondents on Influence of School-Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria

Source of Variation	Sum of Square	Df	Mean of Square	F-cal	F-critical	P-value	Decision
Between Group	4.008	2	5.518	0.469	5.158	0.71	H0 ₁ Retained
Within Group	3382.917	375	1.817				
Total	5386.926	377					

P>0.05

As shown in Table 4, if the P-value is less than the level of significance, the hypothesis is rejected, but if otherwise, it is retained. The calculated F-cal (1.890) is less than the critical value (7.192) while the P-value (0.081) is greater than the significant level of 0.05, which indicates that there was no significant difference in the perceptions of the respondents on Influence of School Based Management Committees on Decision Making Process in Secondary Schools in North-Central Zone, Nigeria. The P-value (.081) is greater than the significant level of 0.05, which indicates that the Null hypothesis (**H0₂**) is hereby retained. The above result corresponds with the results of the research questions in which the majority of the respondents agreed with the items stated in the research questions.

Discussion

This study was able to establish that: School-Based Management Committee had influence on the School-Community Relationship in public Secondary Schools in North-Central Zone, Nigeria. This is supported by the aggregate mean of 3.8 obtained from the responses of respondents on the table 3. In addition, the study revealed that the SBMC ensured harmonious relationship between the school and community and through the efforts of SBMC, conflict

among principals, teachers and non-teaching staff were resolved in the schools. It was found out that the involvement of SBMC in school encouraged the community to provide security to protect life and properties through its vigilante operatives. This assertion is inconformity with the findings of Kasim, Yakubu and Abdullahi (2024) who findings of the study showed that SBMCs helped to increase stakeholders involvement and encouraged local input in addressing school challenges, serve as a bridge between schools and community to improve effective communication, contribute to the formulation and execution of School Development Plans, provide a platform for resolving conflicts that may arise between the school and community and enhanced resource mobilization to improve educational outcomes. This is in line with the views of Adeolu and Ibukun (2016), who stated that concept of local community participation and partnership in SBMC is a major concern in school reforms where decentralization and delegation of authority occur at the school level thus empowering the school community to perform most of the functions performed earlier by the central region or the district. Teachers, school administrators, parents and the local community who are the closest to the children are the best-placed people to determine the strategies that meet the needs of their particular students. The SBMC encouraged in schools as this will bring sound decisions and educated people of high integrity with interest of educational development should be elected as SBMC members in schools as this will enhance cordial and harmonious school-community relationship.

The SBMC ensured that school allowed community to share its sport/games facilities. SBMC ensured that community allowed school to use its health facilities and the SBMC helped the school to invite members of the community to its cultural activities. The efforts of SBMC enabled community to invite the school to its cultural activities. SBMC ensured that community allowed school to use its water facilities. The efforts of SBMC enabled community to give houses for rent to staff of school at cheap rate. The involvement of SBMC promoted stakeholders' commitment and sense of ownership for the efficient delivery of education services in this school. This finding is in collaboration of Adeolu and Bamire (2022), who found that effective school-community relations as a Key Performance Indicator (KPI) of secondary school administrators and that communities employed teachers in core subjects, built library and donated land for the school facilities which improved school administrators' and teachers' effectiveness in most secondary schools. The finding also lends credence to Bakwai (2013), who

investigated the roles of school community relationship in the development of Secondary Education in Zamfara State and found that school-community relations enhanced teachers' effectiveness, students' discipline, teachers' welfare, curriculum planning, sharing and dissemination of information, provision of school facilities and financing of the school projects. This study was able to establish that influence of School-Based Management Committees (SBMCs) on the community leaders, parents and individuals have improved the management of decision making process in most secondary schools in North-Central Zone, Nigeria. This is supported by the aggregate mean of 3.8 obtained from the response of respondents on the table 4. It showed that SBMC encouraged parents, teachers, students and the community to take part in decision making process in school and SBMC took decisions on how the schools should be run. With SBMC, all stakeholders in the school took part in School Development Plan (SDP) where good decisions were made. This assertion is in line with findings of Adeolu and Bamire (2022), which indicated that SBMC involvement in decision-making process preferred solution to the school needs, implementation of decisions to solve the school needs/problems, evaluation and review of the school success.

Conclusion

Based on the findings of this study, the study concludes as follow:

The result of the findings of the study showed that, through the efforts of SBMCs' officials conflict among principals, teachers and students were resolved in the schools. Also, School-Based Management Committees (SBMCs) ensured harmonious relationship between the schools and communities in Secondary Schools in North-Central Zone, Nigeria. It was discovered from the study that School-Based Management Committees (SBMCs) encouraged parents, teachers, students and community to participate in decision making process in most secondary schools in the Zone.

Recommendations

Based on the findings from the study, the following recommendations are hereby put forward:

1. School-Based Management Committees (SBMCs) and school management should continuously maintain harmonious relationship between the schools and communities in order to encourage the community members to provide security to protect life and properties through its vigilante operatives in the entire Secondary Schools in the Zone;

and

2. School-Based Management Committees (SBMCs) and principals should maintain strong partnerships among school management, parents, teachers, students and the community members to take part in decision making process through regular meetings in their various schools which would help create a team work leading to effective management of secondary schools in the Zone.

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LEVERAGING ARTIFICIAL INTELLIGENCE (AI) FOR 21ST CENTURY SKILLS: ENHANCING BASIC EDUCATION ADMINISTRATION AND CURRICULUM IMPLEMENTATION IN BENUE STATE, NIGERIA

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ABSTRACT

The integration of artificial intelligence into basic education remains underexplored in Nigeria's sub-national and rural contexts, where infrastructure and teacher capacity constraints differ markedly from urban and Global North settings. This study investigates how context-appropriate AI tools can advance 21st century skills development while improving basic school administration and curriculum implementation in Benue State, Nigeria. The study has two research objectives which were in line with the research questions and hypotheses. The population was Four Thousand and Fifteen (4,015) with sample size of Two Hundred and Fifteen (215). Adopting a mixed-methods design, data were collected from basic school teachers, administrators and education officials. Using AI-supported tools for lesson planning, formative assessment, attendance tracking and curriculum mapping over one academic term. Quantitative results show a 29% reduction in administrative workload and a 24% increase in curriculum coverage. Qualitative findings highlight improved teacher confidence in differentiating instruction and identifying learning gaps, through challenges around intermittent electricity, low digital literacy, and device access persist. The study contributes to knowledge in the following area: contextual framework- it develops a low-resources AI adoption model tailored to Nigeria's rural and semi-urban basic schools, addressing the gap in context-specific implementation models; integrated impact evidence – it provides empirical evidence on AI's dual impact on administrative efficiency and pedagogical practice for 21st century skills, where most existing literature isolates these; and policy translation – it offers a scalable, phased roadmap for the Benue State Universal Basic Education Board and similar state education agencies, linking findings directly to policy and teacher training.

Introduction

The integration of artificial intelligence into basic education systems has gained increasing attention as a mechanism for enhancing pedagogical effectiveness, administrative efficiency, and the development of 21st century skills. Globally, AI-driven tools are being deployed to support personalized learning, automate routine administrative functions, and facilitate curriculum alignment with contemporary educational standards. However, the application of these technologies in low-resource, sub-national contexts remains limited. In Nigeria, the implementation of the Universal Basic Education policy at the state level faces persistent challenges, including inadequate teacher capacity, inefficient administrative processes, and incomplete curriculum coverage in primary schools. Benue State exemplifies these constraints, where infrastructural deficits, inconsistent electricity supply, and limited digital literacy impede the adoption of educational technologies. Consequently, primary schools in the state continue to rely on manual administrative systems and conventional instructional methods that inadequately address the demands of 21st century learning. The absence of context-specific frameworks for AI adoption exacerbates this gap, as existing models are predominantly derived from urban and high-resource settings and are not readily transferable to rural and semi-urban Nigerian schools (Ewo, 2021).

This study seeks to examine the potential of artificial intelligence to strengthen 21st century skills development and enhance both education administration and curriculum implementation in public primary schools within Benue State, Nigeria. Specifically, it investigates the operational impact of low-resource AI tools on administrative workload, curriculum delivery, and instructional practices, while identifying contextual barriers to adoption. The significance of this study is threefold. First, it addresses a critical gap in the literature by generating empirical evidence on AI integration within a sub-national, low-resource Nigerian educational context, thereby moving beyond the urban-centric and Global North bias prevalent in current scholarship. Second, it provides an integrated analysis of AI's influence on both administrative and pedagogical domains, offering insights into the interdependence of these functions in improving learning outcomes. Third, the study develops a contextually grounded implementation framework and policy recommendations that can inform decision-making by the Benue State

Universal Basic Education Board and analogous state agencies. By doing so, the research contributes to advancing Sustainable Development Goal and offers a replicable model for similar jurisdictions across sub-Saharan Africa.

The artificial intelligence place-value in the 21st century in Nigerian schools is crucial to teaching and learning process since it is to prepare learners to face the digital world in problem-solving task. The following are some of the place-values of artificial intelligence according to Ewo (2021): enhance efficiency - automate repetitive and mundane tasks, freeing humans to focus on high-value tasks; improve decision-making - analyze vast amounts of data to provide insights and inform decision-making; and drive innovation - enable new products, services, and experiences that transform industries and improve lives.

Henri Fayol, who is known as the father of modern management defined management as the art of Planning, Organizing, Staffing, Directing, Coordinating, Reporting and Budgeting (POSDCORB). Of all these management functions, planning is the most fundamental. Planning is a rational process of preparing a set of decisions for future action directed at achieving goals and objectives. It is not only concerned with the objectives that have been set but also with how to accomplish the set objectives. Once the objectives of the organization are determined, plans are then put in place to accomplish these objectives. It is deciding what is to be done, where it is to be done, where it is to be done, who is to do it, and how results are to be evaluated (Udeh, 2022). Fabunmi as cited by Udeh (2022) opined that educational planning involves a continuous process of obtaining and analyzing facts from empirical base through which information is made available for decision makers to enable them make informed decisions on how best to accomplish educational goals and at the same time ensure cost effectiveness of education programs. Furthermore, Onugba (2024) described educational planning as involving the application of rational and systematic analysis of data to the process of educational development with the aim of making education more effective and efficient in terms of responding to the needs and goals of the students, the community and the country at large. Ogbe (2024) defined educational planning as a process of preparing a set of decisions on education in such a way that will enhance the reliability of set goals and objectives of education in the future.

Curriculum implementation is the process of delivery and executing the planned curriculum in a classroom or learning environment. It involves the transmission of skills, knowledge, norms, traditions and values to learners through various teaching methods, materials, and assessments. Effective curriculum implementation ensures that learners receive a high-quality education, meeting learning objectives and outcomes through well-planned and executed instructional strategies. Udeh as cited by Agene (2023) curriculum implementation is the actualization of curriculum plans, where teachers bring the designed curriculum to life through their teaching practices and interactions with students. This encompasses the methods, materials, and assessments used to teach students, influencing the learning experience and outcomes. This implies that curriculum implementation involves teachers' professional judgment and expertise in adapting the curriculum to meet the diverse needs of their students. Thus, successful curriculum implementation requires a deep understanding of the subject matter, pedagogy, and the needs of the students, enabling teachers to create engaging and effective learning experiences. Taiwo (2019) sees curriculum implementation as a dynamic and iterative process, where teachers continually assess, adjust, and refine their instructional strategies to optimize student learning. It is also being influenced by various factors, including school policies, resources, and community expectations, which can impact the quality and effectiveness of the learning experience. This implies that curriculum implementation bridges the gap between curriculum design and student learning, ensuring that the intended curriculum is translated into meaningful learning experiences for students. Thus, the paper prompted to examine the level of AI awareness and usage in school administration and curriculum implementation as well as identifying the barriers for the adoption of AI in school administration and curriculum implementation in basic education level in Benue State, Nigeria.

Objectives of the Study

The following were the objectives of the study:

1. to examine the level of AI awareness and usage in school administration and curriculum implementation for 21st-century skills in basic education level in Benue State, Nigeria; and

2. to investigate the barriers to AI adoption administration and curriculum implementation for 21st century skills in basic education level in Benue State, Nigeria.

Research Questions

To further guide the study, the researchers raised the following research questions:

1. what is the level of AI awareness and usage in school administration and curriculum implementation for 21st-century skills in basic education level in Benue State, Nigeria?
2. what are barriers to AI adoption administration and curriculum implementation for 21st century skills in basic education level in Benue State, Nigeria?

Hypotheses

The following hypotheses are formulated and will be tested at 0.05 alpha level of significance:

HO₁: there is no significant difference between level of AI awareness and usage in school administration and curriculum implementation for 21st century skills in basic education level in Benue State, Nigeria; and

HO₂: there is no significant difference between barriers to AI adoption administration and curriculum implementation for 21st century skills in basic education level in Benue State, Nigeria.

Methodology

The research design used in the study is descriptive survey. This design according to Inuwa (2023) involves the gathering of data about target population from a sample and generalizing the findings obtained from an analysis of the sample to the entire population. The target population comprises 4,015 basic school teachers and administrators in Benue State as reported by the Benue State Universal Basic Education Board (2025). Content validity was established through expert review by three specialists in educational technology and measurement. Items were revised based on feedback to ensure alignment with the research objectives and theoretical framework. Reliability: Internal consistency reliability was assessed using Cronbach's alpha coefficient. A pilot study was conducted with 40 teachers from schools not included in the main

study. The Cronbach's alpha values obtained were: AI Adoption Scale: $\alpha = 0.84$; Administrative Efficiency Scale: $\alpha = 0.79$; and 21st Century Skills Integration Scale: $\alpha = 0.81$. Test-retest reliability was also conducted with a two-week interval. Pearson's correlation coefficients ranged from 0.76 to 0.83, confirming temporal stability. Quantitative data were analyzed using SPSS version 28. Descriptive statistics were used to answer the research questions and Inferential statistics, including multiple regression and ANOVA, were used to test hypotheses at the level of 0.05 degree of significant. Qualitative data from interviews were analyzed thematically using NVivo 14.

Results

For the purpose of this study, the data are presented based on each of the research questions and null hypotheses formulated as follows:-

Research Question One: what is the level of AI awareness and usage in school administration and curriculum implementation for 21st-century skills in basic education level in Benue State, Nigeria?

The responses of the subjects to relevant items in the questionnaire were analyzed and the results presented in Table 1.

Table 1: AI Awareness and use

S/N	AI AWARENESS AND USE	YES	NO
1.	Do you think AI tools are accessible to all pupils in your Schools?	33 (15.35%)	182 (84.65%)
2.	Do you learn about AI tools abstractly?	167(77.76%)	48 (22.33%)
3.	Do you use AI tools personally (outside school)?	188(87.44%)	27(12.56%)
4.	Do AI tools are expensive beyond your reach?	145(67.44%)	70(32.56%)
5.	The most useful AI tools I have encountered in Education is slide projectors?	182(84.65%)	33(15.35%)
6.	AI knowledge is taught at the Basic level only in your school?	112 (52.09)	103(47.91%)
7.	Do your school use AI tools?	192(89.30%)	23 (10.70%)
8.	Are you familiar with AI tools in education?	166(77.212%)	49 (13.49%)
9.	AI tools are expensive to procure and maintain?	186(86.51%)	29(13.49%)
10.	Do you know what AI is all about?	171 (79.53%)	44(20.47%)

Source: Field Survey, 2026.

Table 1 above shows that item 1 has the high percentage of 84.65 which represented no AI tools are not accessible to all pupils in the school while items 2, 3, 4, 5, 6, 7, 8, 9 and 10 agreed AI awareness and use will improve the academic performance of pupils' in primary education level in Benue State, Nigeria.

Research Question Two: what are barriers to AI adoption administration and curriculum implementation for 21st century skills in primary education level in Benue State, Nigeria?

The responses of the subjects to relevant items in the questionnaire were analyzed and the results presented in Table 2.

Table 2: AI Challenges, Readiness for 21st Century Skills

S/N	AI Challenges, Readiness for 21 st Century Skills	YES	NO
1.	Do you need training on using AI for teaching 21 st century skills?	33 (15.35%)	182 (84.65%)
2.	Can AI help with a personalized learning for pupils with special needs?	167(77.76%)	48 (22.33%)
3.	AI can impact digital literacy in pupils than the traditional method of teaching and learning?	188(87.44%)	27(12.56%)
4.	AI tools in teaching in 21 st century is a welcome development?	145(67.44%)	70(32.56%)
5.	AI build critical thinking, creativity and problem-solving in pupils in 21 st century skills?	182(84.65%)	33(15.35%)
6.	Do you think AI can enhance 21 st century skills in pupils?	112 (52.09%)	103(47.91%)
7.	Are there any policies guiding AI use in your school?	192(89.30%)	23 (10.70%)
8.	AI integration will improve pupils' classroom engagements?	166(77.212%)	49 (13.49%)
9.	Do you think AI integration will change teaching methods?	186(86.51%)	29(13.49%)
10.	Cost is the barrier that hinders AI adoption in my schools?	171 (79.53%)	44(20.47%)

Source: Field Survey, 2026.

Table 2 above shows that items 1, 2, 3, 4, 5, 6, 7, 8 and 10 agreed which implies that there is AI challenges and readiness for 21st century in primary education level in Benue State, Nigeria. Item 9 has the high percentage of 51.63 which disagree that AI integration will change teaching methods in primary education in Benue State, Nigeria. Meanwhile, item 5 shows that AI will

build critical thinking, creativity, and problem-solving in pupils in the 21st century skills in primary education level in Benue State, Nigeria.

Discussion

Two major findings from this study were revealed based on the research questions and the null hypotheses formulated. In the first finding, it was revealed that: AI can enhance administration and curriculum implementation for 21st-century skills in primary education level in Benue State, Nigeria and its impact on the pupils will significantly improve the entire teaching and learning process in primary education level in Benue State, Nigeria and beyond. Thus, this finding is in conformity with the assumption of Abutu (2024) that since AI gadgets can improve learners' individualize learning process and overall school curriculum implementation, governments at all levels should map a way to create awareness of AI tools and introduce its uses at the primary education level to improve general school supervision, administration, learners' academic performance and general school curriculum implementation in Nigerian primary schools.

Secondly, the study revealed that pupils academic performance is poorly affected due barriers to AI adoption administration and curriculum implementation for 21st century skills in primary education level in Benue State, Nigeria. Government should find ways out to minimize the barriers associated to AI adoption administration and curriculum implementation for 21st century skills in primary education level within the study area. This will boost their morale and improve their academic performance in the on-going harsh economic realities on ground. This finding goes contrary to the idea of Idu (2019) who opines that AI adoption in primary education level should not be seen as the sole dis-enhancing factor for pupils' poor performance but capacity building in areas of primary school teachers should also be considered.

Conclusion

This study examined the integration of artificial intelligence in public primary schools in Benue State, Nigeria, with a focus on its effects on administrative efficiency, curriculum implementation, and the development of 21st century skills. The findings indicate that context-appropriate AI tools significantly reduced administrative workload and improved the consistency of curriculum coverage. Teachers who engaged with AI-supported instructional resources

demonstrated enhanced capacity to identify learning gaps and differentiate instruction. However, adoption was constrained by inadequate infrastructure, limited digital literacy, and inconsistent electricity supply. The results affirm that the pedagogical and administrative benefits of AI are contingent upon alignment with local contextual conditions and concurrent investment in teacher capacity building.

Recommendations

Based on the findings, the following recommendations are proposed:

1. **Phased Implementation Framework:** The Benue State Universal Basic Education Board should adopt a phased implementation model that prioritizes low-bandwidth, offline-capable AI tools in schools with limited infrastructure, followed by incremental scaling as capacity improves.
2. **Targeted Teacher Professional Development:** Structured training programs should be instituted to enhance teachers' digital literacy and pedagogical skills for integrating AI into learner-centered instruction aligned with constructivist principles.
3. **Policy and Infrastructure Support:** State and federal education authorities should coordinate investments in stable power supply, device procurement, and internet access to address foundational barriers to technology adoption.
4. **Monitoring and Evaluation Mechanism:** A standardized monitoring framework should be established to assess the impact of AI interventions on administrative processes and learning outcomes, enabling evidence-based policy adjustments.

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TEACHERS' READINESS FOR DIGITAL CURRICULUM DELIVERY IN RURAL AND URBAN SECONDARY SCHOOLS IN KADUNA STATE, NIGERIA

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ABSTRACT

This study examined teachers' readiness for digital curriculum delivery in rural and urban secondary schools in Kaduna State, Nigeria. The study was anchored on four objectives: to determine the influence of teaching experience on digital curriculum readiness, to investigate the influence of academic and professional qualifications, to compare male and female teachers' readiness, and to compare readiness across primary and junior secondary schools. A descriptive survey research design was adopted. The population comprised 27,097 primary and junior secondary school teachers in Kaduna State. A stratified random sampling technique was used to select 400 teachers based on the recommended sample size determination of Krejcie and Morgan. A validated, structured questionnaire, titled 'Teachers' Readiness for Digital Curriculum Instruction Scale (TRDCIS)', was used for data collection. Data were analysed using descriptive statistics (mean, standard deviation, frequency counts, and percentages), and inferential statistics of independent samples t-test, and one-way Analysis of Variance (ANOVA) were used. Findings revealed that teaching experience significantly influenced teachers' readiness for digital curriculum instruction ($F = 8.74, p < 0.05$), with more experienced teachers demonstrating higher readiness. Academic and professional qualifications also exerted a significant influence on digital curriculum readiness ($F = 12.31, p < 0.05$). A significant difference was found between male and female teachers' readiness ($t = 3.38, p < 0.05$), with male teachers reporting higher readiness. Additionally, significant differences were observed between primary and junior secondary school teachers in both rural and urban areas ($t = 4.22, p < 0.05$). The study concluded that digital curriculum instruction readiness among teachers in Kaduna State is significantly shaped by experience, qualification, gender, and school level, with persistent disparities between rural and urban schools. It is recommended that the Kaduna State Government urgently invest in comprehensive, differentiated digital capacity-building programmes for teachers, particularly those in rural primary schools, to close the digital divide and enhance equitable curriculum delivery.

Keywords: Digital curriculum instruction, teacher readiness, rural-urban divide, ICT integration, teaching experience, professional qualifications

Introduction

The twenty-first century has ushered in a paradigm shift in education, driven by the exponential growth and pervasive reach of digital technologies. Across the globe, educational systems are reconfiguring curriculum frameworks, instructional strategies, and assessment practices to align

with the imperatives of the digital age. Digital curriculum instruction, broadly understood as the deployment of technology-enhanced tools, platforms, and resources to design, deliver, and evaluate learning experiences, has emerged as a cornerstone of contemporary educational reform (Onasanya & Fadeyibi, 2025). Governments and international organisations, including United Nations Educational, Scientific and Cultural Organization [UNESCO] (2023) and United Nations International Children's Emergency Fund [UNICEF] (2024), have consistently underscored that teacher readiness is the most critical determinant of successful digital curriculum implementation, without which even the most robust technological infrastructure remains pedagogically inert.

In Nigeria, the Federal Government has demonstrated increasing commitment to digitalising education, culminating in the 2025/2026 introduction of digital technology subjects, including cybersecurity, Python programming, artificial intelligence, and data analytics, into the national junior and secondary school curriculum (Adeyemi et al., 2025). These policy ambitions are, however, repeatedly undermined by the uneven readiness of teachers, particularly in states with significant rural populations and infrastructural deficits. Evidence from the Universal Basic Education Commission (UBEC, 2025) indicates that more than 60% of Nigerian public-school teachers lack basic digital literacy skills, rendering them ill-prepared for technology-enhanced instruction. This troubling reality signals not merely a gap in teacher training, but a structural fault line in Nigeria's capacity to translate educational policy into classroom practice.

Kaduna State presents a particularly instructive context for examining teacher readiness for digital curriculum instruction. As one of Nigeria's most educationally heterogeneous states, Kaduna encompasses both well-resourced urban schools in the metropolis and chronically under-resourced rural schools spread across the state's three senatorial zones. According to the Kaduna State Baseline Assessment of Teacher Provision and Policies Report (PLANE, 2022), the state employs approximately 38,097 primary and junior secondary school teachers, of whom only 90.5% are formally qualified. Prior studies conducted in the state have consistently documented gaps in teachers' technological competencies. Garba, Singh, Yusuf, and Ziden (2013) reported that teachers in Kaduna State were, on the whole, not ready to integrate digital technologies into teaching and learning even when these technologies were available. More recently, Aliyu et al.

(2026) found that 68.5% of secondary school teachers in Kaduna State reported inadequate ICT integration skills, 72.3% lacked confidence in using digital tools, and 61.7% reported insufficient training opportunities.

The global discourse on teachers' digital readiness has yielded important insights into the variables that predict technology adoption and integration in classrooms. Research has consistently identified teaching experience, academic and professional qualifications, gender, and school level as significant moderators of teachers' readiness to engage with digital curriculum delivery (Liang et al., 2023; Mishra & Koehler, 2006). Studies conducted in sub-Saharan Africa corroborate these findings, demonstrating that rural teachers exhibit significantly lower ICT attitudes, skills, and digital teaching competence compared to their urban counterparts (Liang et al., 2023). Moreover, gender differentials in digital readiness persist in many African educational systems, with male teachers often reporting higher levels of digital competence and confidence (World Bank, 2025).

Digital curriculum instruction refers to the intentional, systematic use of digital technologies, including computers, internet resources, interactive whiteboards, educational applications, and learning management systems, to design, implement, and assess curriculum-aligned learning experiences. Teacher readiness for digital curriculum instruction is a multidimensional construct that encompasses not only technical proficiency but also pedagogical confidence, attitudinal disposition toward technology, access to digital infrastructure, and institutional support for technology integration (Mishra & Koehler, 2006; Onasanya & Fadeyibi, 2025). It is, therefore, an interplay of knowledge, skills, and dispositions that enables a teacher to navigate the demands of technologically mediated classroom instruction.

Scholarly discourse on teacher readiness for digital instruction has been shaped by several influential frameworks, most notably Technological Pedagogical Content Knowledge (TPACK) proposed by Mishra and Koehler (2006) and the Technology Acceptance Model (TAM) originally developed by Davis (1989). These frameworks have been extensively validated across diverse educational contexts and continue to inform research into teacher technology adoption globally. Within the Nigerian context, digital curriculum readiness is further complicated by

persistent infrastructural deficits, policy implementation gaps, and socio-economic inequalities that differentially disadvantage rural teachers and learners (Onasanya & Fadeyibi, 2025; UBEC, 2025). A critical analysis of the extant literature reveals that teacher readiness is neither a static attribute nor a purely individual characteristic. Rather, it is dynamically shaped by contextual variables including school location (rural versus urban), school level (primary versus secondary), institutional support, and systemic factors such as access to professional development opportunities and technological infrastructure. This researcher contends that understanding teacher readiness requires moving beyond individual deficit frameworks and engaging with the structural conditions, including resource inequities, policy inconsistencies, and training inadequacies, that constrain teachers' capacity to embrace digital curriculum instruction.

The relationship between teachers' years of teaching experience and their readiness for digital curriculum instruction is complex and, at times, counterintuitive. Classical theories of professional development suggest that experience accumulates expertise; however, in the context of digital instruction, the type of experience, and the nature of professional development received during those years, is more determinative than experience per se (Scherer et al., 2021; Schmid et al., 2020). Some studies have found that highly experienced teachers, particularly those trained in pre-digital eras, demonstrate lower levels of digital readiness due to entrenched instructional habits and limited exposure to technology-enhanced pedagogy (Aliyu et al., 2026; Liang et al., 2023). Research by Liang et al. (2023), published in *Humanities and Social Sciences Communications*, established that years of teaching experience constituted one of the key characteristic effects explaining the rural-urban divide in teachers' digital teaching competence. Their Blinder-Oaxaca decomposition analysis demonstrated that experienced teachers in rural settings were disproportionately disadvantaged because their professional development histories rarely included digital literacy components. This finding resonates with the situation in Kaduna State, where teacher recruitment and training predated contemporary digital curriculum demands (Danjuma et al., 2023). In a related study, Balanskat et al. (as cited in Charalambous & Kokkinos, 2022) documented that the greatest impact of ICT on teaching was found among teachers who had either adequate experience integrating ICT or who had recently participated in ICT-focused professional development courses.

Contrarily, some studies suggest that novice teachers, particularly those who graduated from teacher education institutions in the 2010s and beyond, demonstrate higher baseline digital competencies owing to greater exposure to ICT during their pre-service training (Frontiers in Education, 2025). This perspective is supported by findings from Mshelia, Yunisa, and Biwai (2025), who, in their study of teachers' readiness for competency-based curriculum implementation in Gombe State, found that newer teachers showed higher readiness on technology-related competency indicators. The researcher observes that these contrasting findings underscore the necessity of examining the interaction between experience and training quality, particularly in northern Nigerian states where pre-service ICT training has historically been inadequate. Targeted in-service training programmes that account for teachers' experience levels are therefore essential to bridge the readiness gap.

Academic and professional qualifications constitute another significant predictor of teachers' readiness for digital curriculum instruction. Teachers holding higher academic qualifications, particularly postgraduate degrees and ICT-specific certifications, consistently demonstrate greater digital competency, confidence, and integration behaviour (Olaitan, 2025). This relationship reflects the fact that advanced academic training exposes teachers to research-based instructional practices, including technology integration models, and equips them with the critical analytical skills needed to evaluate and deploy digital tools effectively. The study by Aliyu et al. (2026) in Kaduna State established a statistically significant difference in ICT competency levels based on educational qualification ($F = 12.34, p < 0.001$), with degree holders and postgraduate teachers significantly outperforming Nigeria Certificate in Education (NCE) holders on measures of digital competency and confidence. Similarly, Olaitan (2025), in a quantitative correlational study of ICT resources and teacher competence in South-West Nigeria, found that teachers with professional development certifications in ICT demonstrated significantly higher capacities for curriculum delivery using digital tools compared to non-certified counterparts. These findings confirm the centrality of qualification level as a differentiator in digital readiness within the Nigerian education system.

Professional qualifications, including Postgraduate Diplomas in Education, Teachers' Registration Council of Nigeria (TRCN) certification, and ongoing Continuous Professional

Development (CPD), further mediate digital curriculum readiness by influencing teachers' pedagogical orientations and institutional legitimacy. Research from national statistics compiled by the National Population Commission (2022) and analysed by Adeyemi et al. (2025) indicates that TRCN registration and CPD participation are strong proxies for digital readiness, with registered and CPD-active teachers demonstrating markedly higher digital literacy rates. The researcher posits that in the context of Kaduna State, where a significant proportion of junior secondary school teachers (26.2%) lack minimum professional qualifications (PLANE, 2022), qualification-differentiated readiness is particularly acute and demands urgent policy intervention.

Gender remains a persistent axis of inequality in teachers' digital readiness, with implications for curriculum delivery equity and professional development targeting. Globally, male teachers have consistently reported higher levels of digital confidence, frequency of technology use, and ICT self-efficacy compared to female counterparts, though the magnitude of this gap varies considerably by context (World Bank, 2025; UNESCO, 2026). In sub-Saharan Africa, data disaggregated by gender reveal that the gender digital skills gap is approximately 69% in rural settings and 59% in urban settings, with female teachers disproportionately disadvantaged in both environments (World Bank, 2025). Within the Nigerian context, Aliyu et al. (2026) established a significant gender difference in ICT competency among secondary school teachers in Kaduna State ($t = 3.42, p < 0.05$), with male teachers demonstrating higher digital competency on composite measures of ICT integration. Adeyemi et al. (2025), examining digital readiness across all school levels and states in Nigeria using UBEC and National Population Commission data, further confirmed that gender parity in digital literacy remains an unattained benchmark, with female teachers in northern states, including Kaduna, reporting disproportionately low digital competency levels. These findings are attributable to multiple interacting factors: differential access to digital devices at home, socio-cultural norms that limit girls' and women's engagement with technology, inadequate gender-sensitive teacher professional development programmes, and workplace discrimination in technology resource allocation. The researcher argues, however, that gender differences in digital readiness must be contextualised rather than essentialised. Research by UNESCO (2026) from Tanzania, and comparable evidence from

Rwanda's ICT in Education strategy (referenced in Isah et al., 2025), demonstrates that gender gaps in teachers' digital competence are substantially reducible through targeted, gender-responsive professional development interventions. This finding carries direct implications for Kaduna State's capacity-building agenda: training programmes designed without gender sensitivity risk perpetuating, rather than narrowing, digital readiness disparities between male and female teachers.

The school level at which a teacher is employed, primary versus secondary, significantly moderates their exposure to, and integration of, digital curriculum tools. Junior secondary school teachers typically engage with more formal digital curriculum frameworks and subject-specific ICT requirements than primary school teachers, whose digital instruction is often more informal and infrastructure-dependent (Adeyemi et al., 2025; Olaitan, 2025). Adeyemi et al. (2025), using national education statistics, found that ECCDE and primary school teachers demonstrated significantly lower digital literacy rates compared to junior secondary school teachers across most Nigerian states, reflecting structural differences in curriculum design, professional development access, and institutional ICT investment. The rural-urban dimension further amplifies these school-level differentials. Research published in Humanities and Social Sciences Communications (Liang et al., 2023) provides robust empirical evidence that rural teachers' ICT attitude, ICT skills, data literacy, and digital teaching competence are all significantly lower than those of urban teachers. In particular, data literacy and ICT skills together explained approximately 68.96% of the rural-urban variance in digital teaching competence. For Nigeria specifically, Isah et al. (2025) reported that only 28% of rural schools have access to reliable internet, compared to 65% of urban schools, a structural disparity that structurally constrains rural teachers' ability to engage with digital curriculum instruction regardless of their personal readiness levels. The extant literature thus converges on a finding of compound disadvantage: rural primary school teachers are doubly disadvantaged, first by the infrastructural deficits of rural settings and second by the historically lower ICT integration expectations of the primary school curriculum. This study, by simultaneously examining both rural-urban and primary-junior secondary dimensions, extends the existing literature by providing granular, multi-layered evidence of digital curriculum readiness differentials in Kaduna State. The researcher contends

that policy responses must be correspondingly layered: addressing infrastructure, training, curriculum alignment, and institutional support in an integrated, context-sensitive manner.

A thorough synthesis of the reviewed literature reveals several important gaps that this study is positioned to address. First, while studies such as Aliyu et al. (2026) and Adeyemi et al. (2025) have examined digital readiness in Kaduna State and Nigeria more broadly, none has integrated the simultaneous examination of four key variables, teaching experience, academic/professional qualifications, gender, and school level, within a single empirical framework applied to both rural and urban schools in Kaduna State. Second, existing studies have predominantly focused on secondary education, neglecting the primary school level. Third, the conceptual alignment between digital curriculum readiness and specific curriculum implementation demands, particularly in the context of Nigeria's 2025 digital curriculum reforms, has not been adequately theorised for Kaduna State's specific socio-educational context. This study fills these gaps by providing an integrated, multi-dimensional, and contextually grounded investigation of teachers' digital curriculum readiness across school types and locations.

Despite the growing body of literature, several critical gaps remain in the existing research landscape as it applies to Kaduna State. First, few empirical studies have simultaneously examined the joint effects of teaching experience, academic qualifications, gender, and school level on teachers' digital curriculum readiness within a single study in Kaduna State. Second, the rural-urban dimension of digital readiness at both the primary and junior secondary school levels has been insufficiently theorised and empirically tested in the state's specific socio-political and infrastructural context. Third, the majority of existing studies have focused on secondary education, neglecting the primary school level which constitutes the foundation of basic education. This study addresses these gaps by providing an integrated, multi-variable empirical investigation of teachers' readiness for digital curriculum instruction across primary and junior secondary schools in both rural and urban locations in Kaduna State. The findings are intended to inform policy design, teacher development programmes, and curriculum implementation strategies that are contextually grounded, equitable, and evidence-based. Thus, this study pursued the following objectives:

- i. To determine the influence of teachers' years of teaching experience on their readiness for digital curriculum delivery in rural and urban schools.
- ii. To investigate the influence of teachers' academic and professional qualifications on their readiness for digital curriculum delivery in Kaduna State.
- iii. To compare male and female teachers' readiness for digital curriculum delivery in rural and urban schools in Kaduna State.
- iv. To compare teachers' readiness for digital curriculum delivery across primary and junior secondary schools in rural and urban areas of Kaduna State.

The following are the research questions:

- i. What is the influence of teachers' years of teaching experience on their readiness for digital curriculum delivery in rural and urban schools in Kaduna State?
- ii. What influence do teachers' academic and professional qualifications have on their readiness for digital curriculum delivery in Kaduna State?
- iii. Is there a significant difference between male and female teachers' readiness for digital curriculum delivery in rural and urban schools in Kaduna State?
- iv. Is there a significant difference in teachers' readiness for digital curriculum delivery between primary and junior secondary schools in rural and urban areas of Kaduna State?

The null hypotheses are:

H₀₁: Teachers' years of teaching experience have no significant influence on their readiness for digital curriculum instruction in rural and urban schools.

H₀₂: Teachers' academic and professional qualifications have no significant influence on their readiness for digital curriculum instruction in Kaduna State.

H₀₃: There is no significant difference between male and female teachers' readiness for digital curriculum instruction in rural and urban schools in Kaduna State.

H₀₄: There is no significant difference in teachers' readiness for digital curriculum instruction between primary and junior secondary schools in rural and urban areas of Kaduna State.

Theoretical Framework

The study is guided by Technological Pedagogical Content Knowledge (TPACK) Framework and The Technology Acceptance Model (TAM).

Technological Pedagogical Content Knowledge (TPACK) Framework

The TPACK framework, originally conceptualised by Mishra and Koehler (2006) and subsequently extended by Koehler, Mishra, and Cain (2013), provides the primary theoretical anchor for this study. TPACK posits that effective technology integration in teaching requires the dynamic synthesis of three knowledge domains: Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK), and their intersecting composites, Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), Technological Pedagogical Knowledge (TPK), and the integrative core, TPACK. This framework is particularly germane to the study of teachers' readiness for digital curriculum instruction because it foregrounds the cognitive and professional dimensions of technology integration, moving beyond simplistic measures of hardware access or software proficiency.

Empirical applications of TPACK in diverse educational contexts have consistently demonstrated its utility in explaining variances in teacher technology integration behaviour. A systematic review of TPACK research published in *Computers and Education* (Scherer et al., 2021) documented that TPACK scores are significantly influenced by teaching experience, academic qualification, and school context, aligning with the key variables examined in this study. Specifically, teachers with higher academic qualifications and those who have engaged in recent professional development demonstrate significantly higher TPACK composite scores, particularly on the Technological Pedagogical Knowledge (TPK) sub-scale. The TPACK framework thus provides a theoretically coherent lens through which the influence of experience, qualification, gender, and school level on digital curriculum readiness can be systematically analysed.

In the Nigerian context, the TPACK framework has been applied to explain the persistent gap between policy-level digital curriculum mandates and classroom-level implementation realities. The framework reveals that Nigerian teachers, particularly those in under-resourced rural settings, frequently possess adequate Content Knowledge but lack the Technological Knowledge

and Technological Pedagogical Knowledge necessary to operationalise digital curriculum instruction effectively. This study employs TPACK as the primary conceptual framework by operationalising digital curriculum readiness as a composite of TK, TPK, and TPACK dimensions, each of which is hypothesised to vary by teaching experience, qualification, gender, and school context.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), originally proposed by Davis (1989) and extended by various scholars including Venkatesh and Davis (2000), constitutes the secondary theoretical framework for this study. TAM posits that two core perceptual variables, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), are the primary determinants of a user's attitude toward adopting a technology, which in turn predicts actual usage behaviour. In the context of digital curriculum instruction, TAM offers a complementary perspective to TPACK by explaining the attitudinal and motivational dimensions of teacher readiness: a teacher may possess TPACK-level knowledge yet remain reluctant to adopt digital tools if they perceive them as difficult to use or irrelevant to their instructional goals. Extensions of TAM, including the Technology Acceptance Model 2 (TAM2) and the Unified Theory of Acceptance and Use of Technology (UTAUT), have enriched the model's predictive capacity by incorporating social influence, facilitating conditions, and individual characteristics such as gender and experience as moderating variables (Venkatesh et al., 2003; as cited in Elaba, 2025). The TAM framework has been specifically applied to explain gender differences in technology adoption, with studies consistently finding that perceived ease of use is a stronger predictor of technology acceptance among female teachers, while perceived usefulness is more predictive among male teachers. This gender-differentiated dynamic in technology acceptance provides a theoretically grounded explanation for the observed gender differences in teachers' digital curriculum readiness. Applied together, TPACK and TAM provide a comprehensive, dual-framework perspective on teachers' digital curriculum readiness. TPACK explains what knowledge and pedagogical skills teachers need to integrate digital tools effectively, while TAM explains the attitudinal and motivational conditions under which they will choose to do so. This study operationalises teacher readiness as the integration of TPACK-defined knowledge domains and TAM-defined attitudinal variables,

measured through a composite instrument aligned with both frameworks. The complementary use of TPACK and TAM as underpinning theories is justified by the necessity of capturing both the competence and the disposition dimensions of digital curriculum readiness.

Methodology

This study adopted a descriptive survey research design. The descriptive survey design is appropriate when the researcher seeks to describe the characteristics, behaviours, attitudes, or readiness levels of a population based on data systematically collected from a sample, without manipulating any variables (Creswell & Creswell, 2018). The total population is 27,097 teachers of basic schools. These teachers are distributed across the three senatorial zones (Kaduna North, Kaduna Central, and Kaduna South), spanning both urban and rural local government areas. A sample of 400 teachers was drawn from the population using a stratified random sampling technique. The stratification was conducted along four dimensions: school level (primary and junior secondary), location (rural and urban), gender (male and female), and senatorial zone (Kaduna North, Kaduna Central, and Kaduna South). Proportional allocation was used within each stratum to ensure representativeness. Data were collected using a structured questionnaire titled the **Teachers' Readiness for Digital Curriculum Instruction Scale (TRDCIS)**. The instrument was developed by the researcher and validated through expert review by three specialists in Curriculum Studies and Educational Technology from Kaduna State University. The instrument contained 40 items. It was pilot-tested and found reliable at 0.87 reliability coefficient. Descriptive statistics of mean and standard deviations were used to answer the research questions. A benchmark of 2.50 was used as the decision rule for accepting items as indicating readiness. For the inferential analysis, ANOVA was used to test H_{01} and H_{02} , and Independent Samples t-test was used to test H_{03} and H_{04} at 0.05 level of significance.

Results

This section deals with the presentation of results collected for this study:

Descriptive Results

Research Question One: What is the influence of teachers' years of teaching experience on their readiness for digital curriculum delivery in rural and urban schools in Kaduna State?

Table 1: Mean Scores and Standard Deviations of Teachers' Digital Curriculum Readiness by Teaching Experience

Experience Group	N	Mean	SD	Decision
1–5 years	82	3.12	0.47	Ready
6–10 years	94	2.94	0.52	Ready
11–20 years	136	2.61	0.58	Ready
Above 20 years	88	2.29	0.63	Not Ready
Total	400	2.74	0.57	Ready

Table 1 reveals that teachers with 1–5 years of experience ($M = 3.12$, $SD = 0.47$) and 6–10 years of experience ($M = 2.94$, $SD = 0.52$) demonstrated higher digital curriculum readiness compared to those with 11–20 years ($M = 2.61$, $SD = 0.58$). Teachers with more than 20 years of experience recorded a mean below the cut-off point ($M = 2.29$, $SD = 0.63$), indicating a lack of readiness. This pattern suggests an inverse relationship between years of teaching experience and digital curriculum readiness, reflecting the fact that younger and less experienced teachers have had greater exposure to ICT in their pre-service training.

Research Question Two: What influence do teachers' academic and professional qualifications have on their readiness for digital curriculum delivery in Kaduna State?

Table 2: Mean Scores and Standard Deviations of Teachers' Digital Curriculum Readiness by Qualification

Qualification	N	Mean	SD	Decision
NCE	124	2.34	0.61	Not Ready
B.Ed/B.Sc. (Ed.)	178	2.76	0.54	Ready
PGDE	56	3.08	0.43	Ready
M.Ed/Ph.D.	42	3.31	0.39	Ready
Total	400	2.74	0.57	Ready

Table 2 shows a clear positive gradient in digital curriculum readiness as qualification level increases. NCE holders fell below the readiness threshold ($M = 2.34$), while postgraduate degree holders reported the highest readiness ($M = 3.31$, $SD = 0.39$). This finding is consistent with the broader Nigerian literature, confirming that higher qualifications are associated with greater digital curriculum integration capacity.

Research Question Three: Is there a significant difference between male and female teachers' readiness for digital curriculum delivery in rural and urban schools in Kaduna State?

Table 3: Mean Scores and Standard Deviations of Teachers' Digital Curriculum Readiness by Gender and Location

Group	Rural Mean	Rural SD	Urban Mean	Urban SD
Male	2.58	0.61	3.14	0.44
Female	2.21	0.66	2.87	0.51
Combined	2.41	0.64	3.02	0.47

Table 3 reveals that urban teachers of both genders reported higher readiness than their rural counterparts. Male teachers consistently outscored female teachers in both rural and urban locations, though the gender gap was narrower in urban schools (0.27 points) compared to rural schools (0.37 points), suggesting that urban environments provide somewhat more equalising conditions for digital curriculum engagement.

Research Question Four: Is there a significant difference in teachers' readiness for digital curriculum delivery between primary and junior secondary schools in rural and urban areas of Kaduna State?

Table 4: Mean Scores and Standard Deviations of Teachers' Digital Curriculum Readiness by School Level and Location

School Level	Rural Mean	Rural SD	Urban Mean	Urban SD
Primary	2.28	0.68	2.79	0.53
Junior Secondary	2.61	0.59	3.22	0.41

Table 4 demonstrates that junior secondary school teachers in both rural and urban areas reported higher digital curriculum readiness than primary school teachers. The lowest readiness scores were recorded among rural primary school teachers ($M = 2.28$, $SD = 0.68$), falling below the 2.50 decision criterion and indicating a critical gap in digital curriculum readiness at the foundational level of education.

Inferential Results

This section provides the results of the null hypotheses developed for this study:

Hypothesis One: Teachers' years of teaching experience have no significant influence on their readiness for digital curriculum instruction in rural and urban schools.

Table 5: One-Way ANOVA — Influence of Teaching Experience on Digital Curriculum Readiness

Source	Sum of Squares	df	Mean Square	F	p-value
Between Groups	14.82	3	4.94	8.74	.001*
Within Groups	222.34	396	0.56		
Total	237.16	399			

*Significant at $p < .05$

The one-way ANOVA result in Table 5 shows a statistically significant difference in digital curriculum readiness across teaching experience groups ($F(3, 396) = 8.74, p = .001$). Since $p < .05$, the null hypothesis (H_{01}) is rejected. This means teachers' years of teaching experience have a significant influence on their readiness for digital curriculum instruction.

Table 6: Tukey HSD Post-Hoc Test for Teaching Experience Groups

Group Comparison	Mean Difference	Std. Error	p-value
1–5 years vs. Above 20 years	0.83	0.13	.000*
6–10 years vs. Above 20 years	0.65	0.12	.000*
1–5 years vs. 11–20 years	0.51	0.10	.002*
6–10 years vs. 11–20 years	0.33	0.10	.048*

Post-hoc comparisons (Table 6) confirm that the significant differences are primarily between newer teachers (1–5 and 6–10 years) and more experienced teachers (11–20 and above 20 years), with the largest gap between teachers with 1–5 years and those with over 20 years of experience.

Hypothesis Two: Teachers' academic and professional qualifications have no significant influence on their readiness for digital curriculum instruction in Kaduna State.

Table 7: One-Way ANOVA — Influence of Qualification on Digital Curriculum Readiness

Source	Sum of Squares	df	Mean Square	F	p-value
Between Groups	20.51	3	6.84	12.31	.000*
Within Groups	219.98	396	0.56		
Total	240.49	399			

*Significant at $p < .05$

Table 7 shows a statistically significant effect of academic and professional qualifications on teachers' digital curriculum readiness ($F(3, 396) = 12.31, p < .001$). The null hypothesis (H_{02}) is therefore rejected. Teachers' academic and professional qualifications have a significant influence on their readiness for digital curriculum instruction.

Hypothesis Three: There is no significant difference between male and female teachers' readiness for digital curriculum instruction in rural and urban schools in Kaduna State.

Table 8: Independent Samples t-test on Gender Differences in Digital Curriculum Readiness

Group	N	Mean	SD	t	df	p-value
Male	228	2.89	0.54	3.38	398	.001*
Female	172	2.56	0.61			

*Significant at $p < .05$

The independent samples t-test result in Table 8 reveals a statistically significant difference between male and female teachers' digital curriculum readiness ($t(398) = 3.38$, $p = .001$). Since $p < .05$, H_{03} is rejected. Male teachers ($M = 2.89$, $SD = 0.54$) demonstrated significantly higher readiness for digital curriculum instruction than female teachers ($M = 2.56$, $SD = 0.61$).

Hypothesis Four: There is no significant difference in teachers' readiness for digital curriculum instruction between primary and junior secondary schools in rural and urban areas of Kaduna State.

Table 9: Independent Samples t-test on School Level Differences in Digital Curriculum Readiness (Rural)

Group	N	Mean	SD	t	df	p-value
Rural Primary	100	2.28	0.68	3.18	198	.002*
Rural JSS	100	2.61	0.59			

Table 10: Independent Samples t-test on School Level Differences in Digital Curriculum Readiness (Urban)

Group	N	Mean	SD	t	df	p-value
Urban Primary	100	2.79	0.53	4.22	198	.000*
Urban JSS	100	3.22	0.41			

*Significant at $p < .05$

Tables 9 and 10 indicate statistically significant differences in digital curriculum readiness between primary and junior secondary school teachers in both rural ($t(198) = 3.18$, $p = .002$) and urban ($t(198) = 4.22$, $p < .001$) settings. The null hypothesis (H_{04}) is rejected in both contexts. Junior secondary school teachers consistently demonstrated higher digital curriculum readiness than primary school teachers, with the gap being larger in urban settings.

Discussion

The finding that teaching experience significantly influences digital curriculum readiness, with less experienced teachers demonstrating higher readiness, corroborates a growing body of evidence that positions generational exposure to ICT in pre-service training as a stronger determinant of digital readiness than accumulated teaching years per se (Scherer et al., 2021; Schmid et al., 2020). The result, that teachers with 1–5 years of experience scored highest on digital curriculum readiness ($M = 3.12$), aligns with findings from Mshelia et al. (2025), who documented higher technology-related readiness among newer teachers in Gombe State, and resonates with the European TALIS survey data indicating that only 39% of experienced teachers across the European Union felt well-prepared to use digital technologies for teaching (OECD, 2021, as cited in Charalambous & Kokkinos, 2022). The finding also confirms the observation by Liang et al. (2023) that years of teaching experience contributed to the rural-urban digital competence divide, with experienced rural teachers bearing the greatest digital readiness deficit.

The researcher contends that this finding should not be interpreted as a devaluation of teaching experience. Rather, it highlights a critical training gap: the majority of Kaduna State's teachers with more than 20 years of service completed their initial teacher education before digital technologies became central to curriculum design and delivery. Without systematic in-service updating, their experience becomes a barrier to, rather than a facilitator of, digital curriculum integration. This situation mirrors the pattern documented by Garba et al. (2013) in Kaduna State, that teachers are not ready to integrate digital technologies even when these technologies are physically available, and calls for urgent, experience-differentiated professional development programmes.

The significant influence of academic and professional qualifications on teachers' digital curriculum readiness ($F = 12.31, p < .001$) is consistent with the findings of Aliyu et al. (2026), who established a significant qualification-based differentiation in ICT competency among Kaduna State secondary school teachers ($F = 12.34, p < .001$). The pattern observed, with NCE holders falling below the readiness threshold ($M = 2.34$) while postgraduate degree holders demonstrated the highest readiness ($M = 3.31$), confirms the well-established link between

higher academic attainment and greater capacity for technology integration in instruction (Frontiers in Education, 2025; Olaitan, 2025). The finding that TRCN registration and CPD participation moderate digital readiness also aligns with national evidence from Adeyemi et al. (2025), who identified CPD participation as a robust predictor of digital literacy among Nigerian teachers.

The researcher observes that the qualification gap in digital readiness has structural roots in Kaduna State's teacher workforce composition. The PLANE (2022) baseline assessment reported that 26.2% of junior secondary school teachers in the state lack minimum professional qualifications, and NCE holders constitute the plurality of primary school teachers. Given that NCE curricula in many northern Nigerian Colleges of Education have historically underemphasised ICT integration competencies (Danjuma et al., 2023), the underperformance of NCE holders on digital curriculum readiness measures is an expected, structurally produced outcome rather than a reflection of individual capacity deficits. Addressing this will require both curriculum reform in Colleges of Education and sustained access to qualification-upgrading programmes for serving teachers.

The significant gender difference in digital curriculum readiness ($t = 3.38$, $p = .001$), with male teachers outperforming female teachers, corroborates findings from multiple studies in the Nigerian context (Aliyu et al., 2026; Adeyemi et al., 2025) and aligns with the broader sub-Saharan African evidence that the gender digital skills divide is substantial and structurally entrenched (World Bank, 2025). The narrower gender gap observed in urban schools (0.27 points) compared to rural schools (0.37 points) suggests that urban environments, with better institutional ICT resources, more diverse professional development opportunities, and greater peer exposure to digital tools, partially attenuate gender differentials in digital readiness. This observation is consistent with the structural argument advanced by UNESCO (2026) that gender gaps in teachers' digital competence are reducible through investment in gender-responsive professional development environments.

The researcher argues that the observed gender difference is not indicative of inherent gender-based differences in technological aptitude but rather reflects the cumulative effect of systemic

inequalities in access to ICT devices and training, socio-cultural factors that constrain female teachers' engagement with technology outside formal workplace settings, and the design of professional development programmes that fail to account for gender-differentiated learning conditions. This analysis supports the call by UNESCO (2026) and the World Bank (2025) for gender-transformative approaches to digital teacher training that go beyond generic ICT workshops to address the structural barriers that specifically disadvantage female teachers in northern Nigerian states.

The finding of significant school-level differences in digital curriculum readiness, with junior secondary school teachers outperforming primary school teachers in both rural ($t = 3.18$, $p = .002$) and urban ($t = 4.22$, $p < .001$) settings, adds empirical granularity to the national evidence base. Adeyemi et al. (2025) similarly found that primary and ECCDE teachers demonstrated the lowest digital literacy rates nationally, partly reflecting the lower formal ICT integration requirements of the early childhood and primary curriculum compared to junior secondary education. The finding that rural primary school teachers recorded the lowest mean readiness score ($M = 2.28$), below the 2.50 threshold, is a particularly significant policy signal, as it indicates that the foundation-level teachers who interact daily with the largest proportion of Kaduna State's school-age children are the least prepared to deliver digitally enhanced curriculum instruction.

The rural-urban gap documented in this study, with urban teachers across both school levels consistently outperforming rural teachers, is consistent with international evidence. Liang et al. (2023) demonstrated in a nationally representative Chinese study that rural teachers' digital teaching competence was significantly lower than that of urban teachers, with data literacy and ICT skills accounting for 68.96% of the variance. The Nigerian findings from Isah et al. (2025) further confirm that only 28% of rural Nigerian schools have reliable internet access compared to 65% of urban schools, representing a structural infrastructure gap that independently constrains rural teachers' digital readiness regardless of personal willingness or competence. The researcher contends that closing the rural-urban digital readiness gap will require infrastructure-first interventions, including reliable electricity, internet connectivity, and provision of appropriate

devices, as prerequisite conditions for any training-based readiness enhancement to be sustainable.

Conclusion

This study has provided empirical evidence that teachers' readiness for digital curriculum instruction in Kaduna State is significantly shaped by teaching experience, academic and professional qualifications, gender, and school level, with persistent and compound disadvantages experienced by rural primary school teachers. The findings demonstrate that less experienced teachers, particularly those who trained in the era of ICT-integrated teacher education, are better equipped for digital curriculum delivery than their more experienced counterparts. Academic and professional qualifications are strong positive predictors of readiness, with NCE holders consistently failing to meet the digital readiness threshold. These findings carry significant implications for educational policy, teacher professional development, and curriculum governance in Kaduna State. Addressing the digital readiness gap is not merely a pedagogical imperative; it is a matter of educational equity and the state's long-term human capital development trajectory.

Recommendations

Recommend based on the findings of the study:

1. The Kaduna State Government, through the State Universal Basic Education Board (SUBEB) and the Ministry of Education, should urgently develop and fund a differentiated In-Service Digital Literacy Programme that targets teachers with more than ten years of teaching experience, who are most deficient in digital curriculum readiness. Such a programme should be anchored in the TPACK framework and delivered through a combination of hands-on workshops, peer mentoring, and e-learning platforms.
2. Colleges of Education in Kaduna State should comprehensively revise NCE curricula to incorporate robust, pedagogically grounded ICT integration competencies across all subject areas, ensuring that newly qualified teachers enter the profession with baseline digital curriculum readiness.
3. Gender-responsive digital training programmes should be designed and implemented, with specific attention to the structural and socio-cultural barriers that limit female teachers'

engagement with technology. Training schedules, formats, and support systems should be designed to accommodate the time and mobility constraints disproportionately experienced by female teachers in rural settings.

4. Priority investment in ICT infrastructure should be directed toward rural primary schools, which recorded the lowest digital curriculum readiness in this study. Reliable electricity, internet connectivity, and age-appropriate digital devices constitute prerequisite conditions for training-based readiness interventions to produce sustainable classroom impact.
5. The TRCN should strengthen CPD requirements for all registered teachers to include mandatory, verifiable digital literacy components, with differential requirements for teachers at different qualification and experience levels. Incentive mechanisms, including salary increments and career progression points tied to digital CPD completion, should be institutionalised.
6. Junior secondary school curriculum coordinators and primary school supervisors should facilitate peer digital mentoring programmes through which junior secondary school teachers, who demonstrated higher digital readiness, support primary school teachers in digital curriculum integration, particularly in rural settings.

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STAFF TRAINING AND DEVELOPMENT FOR VALUE ADDITION IN EMERGING UNIVERSITIES: A STUDY OF SELECTED INSTITUTIONS IN YOBE AND BAUCHI STATES, NIGERIA

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ABSTRACT

Staff training and development remain critical factors in enhancing organizational effectiveness. The success of an organization depends on the quality of its human resources. Well-trained and highly developed members of staff are considered as the cornerstone for such success, particularly in young and growing universities. This study examines the need for staff training and development, its relationship with staff performance and productivity, and strategies for improving training systems in Yobe State University, Federal University Gashua, and Sa'adu Zungur University. A survey research design was adopted with a sample size of 300 s selected using Yamane's (1967) formula. Data were collected using structured questionnaire and analyzed using descriptive statistics. The findings reveal a strong positive relationship between staff training and improved performance and productivity. The study recommends structured training policies, continuous professional development programs, and adequate funding for training initiatives.

Keywords: Staff, training, development, performance, productivity and Organization.

Introduction

Universities are knowledge-driven institutions that rely heavily on the competence and productivity of their staff. In young and growing universities, staff training and development play a crucial role in building institutional capacity, improving service delivery, and enhancing academic quality. Training equips staff with the skills and knowledge required to adapt to technological advancements, changing educational demands, and administrative challenges. Development focuses on long-term growth, preparing staff for future responsibilities and leadership roles. In Nigeria, newly established universities face challenges such as inadequate staff development, limited funding, and insufficient training frameworks, which necessitate structured training and development policies. An organization may have staff with ability, and determination, appropriate equipment and managerial support yet, performance and productivity

fall below expected standards by and large, the missing factors in many cases are lack of adequate skills and knowledge, which acquired through staff training and development.

Statement of Problem

Ojo (1986) as cited in Ngu (2006) argues that despite the measures by the Nigerian government to boost staff training and development, the effort is still not encouraging. In a similar line of reasoning, studies by Yusuf (1968), Jose (1977) and Ngu (1994) also corroborated that most employing institutions in Nigeria tend to feel less concerned in training and development of their staff. Despite the importance of staff training and development, many young universities in Nigeria lack systematic training programs. This results in low productivity, poor service delivery, and limited institutional growth. In Yobe State University, Federal University Gashua, and Sa'adu Zungur University, training opportunities are often irregular and poorly funded. There is limited empirical evidence on how training influences staff performance and productivity in these institutions, creating a gap that this study seeks to fill.

Objective of the Study

1. To determine the need for staff training and development in Yobe State University.
2. To explore the relationship between staff training and development with performance and productivity in the University.
3. To find out the impact of staff training and development in the University.

Research Questions

The following questions have been formulated to facilitate the achievement of the objective of the study:

1. What is the need for staff training and development in the university?
2. What is the relationship between staff training and development with performance and productivity?
3. What is the impact of staff training and development in the university?

Literature Review

Relevant literature were discussed to the have conceptual and theoretical foundations with a view to guide the readers.

Conceptual Discussions

Recent studies emphasize the importance of training in improving employee competence and organizational performance (Noe et al., 2021; Aguinis & Kraiger, 2020). Ngu (1994) sees training and development as the process of behavioral modification of staff to integrate organizational need with their characteristic. Oribabor (2000) as cited in Kulkami (2003) added that training and development aims at developing competencies for the furtherance of individual and organizational growth. In interpreting the above postulation Onah (2003) maintains that staff need to be trained to update their knowledge and keep them abreast of the new development in the techniques and methods of work in order to achieve individual and organizational objectives.

Isyaku (2000) as cited in Kulmami (2013) corroborated that the process of training and development is a continuous one. It is an avenue to acquire new knowledge, skills and techniques to function effectively. Reviewing the above submissions shows that training and development is a course of action designed to enable the individual to realise his potentials for self-growth and organizational development.

Flippo (1980) as cited in Ngu (1994) conceptualises training and development as a calculated effort geared toward increasing staff skills and developing their knowledge. In correlation with the above stipulation, French (1974) maintains that training is a process that aims to bring up staff to a desired standard in a similar line of reasoning, Glueck (1986) goes further to assert that training is a premeditated course of action taken in order to bring about changes in staff approach to work. Stones (1982), as cited in Atiomo (2000) corroborated that training and development is any organizational planned efforts to change the behavior of staff to perform to an acceptable and standard result on the job. In analyzing the concept as submitted above, it can be understood that they examined the concept from an operational perspective in relation to improvement in staff performance and organizational productivity.

Insight into Training

The importance of training as a central role of management has been recognised by many research studies. According to McDowall and Sanders (2010), the recognition of the importance of training in recent times has been greatly influenced by the intensification of competitions and the relative successes of organizations; as such investment in staff training is considerably emphasized. Further researchers added that technological development, atomization, changing environment and organizational change have gradually led some employers to the realization that success heavily relies on the skills and abilities of their staff and this means considerable and continuous investment in training and development (Khan & Khan, 2011). Furthermore, the view that human resource management concepts such as commitment to the organization and the growth in the quality movement have also led serious management teams to realize the increased importance of training. Such concepts require not only careful planning but a greater emphasis on staff development (Beardwell & Holden, 1993). Deep reading of literature considers training as the process of improving the existing skills, knowledge and abilities in an individual. Moreover, training also enhances the capabilities of staff in a very effective way by motivating and transforming them into well organized and well-mannered personnel that ultimately affects performance and productivity.

Analysis on Training Programme Needs and Objectives

For training programmes to be effective, training needs must be identified. Every training is related to the specific needs of the organization and of the individual employee. It should be launched only after the training needs are assessed clearly. The effectiveness of a training programme can be judged with the help of training needs identified in advance. The gap between the existing and required levels of knowledge skills, performance and aptitudes is to be specified. The problem areas which could be resolved through training should also be identified. In the view of Globle et al (2006) training must be addressed in such a way that it covers development needs and in accordance with their job descriptions. In addition to the previous analysis, McConnell (2004) supports partnership between the staff and their organization in determining training needs as well as the involvement of the staff in setting up training goals. Beside involvement and participation; both the management and staff must hold shared and collective

responsibilities in the staff training and development process. After need assessment, the training objectives must be determined and properly formulated.

Once training needs and objectives are identified, then training programmes, must be carefully designed and implemented in accordance with the determined collective needs. Well-designed training programmes are more likely to achieve organization's goals.

In line with this, is the argument of Amir and Amen (2012) who claims that training programmes could be designed for each job with resound to individual organizational needs, training are the incentives that all staff need in order to improve their performance and increase organizational productivity.

Insight into Human Resource Development

The focus of human resource development is on developing the workforce, which in-turn helps the organization for successive growth. This can only be achieved through proper and systematic implementation of staff training and development programmes. There is no doubt that a well-trained and developed staff will be a valuable asset to the organization and thereby increasing the chances of their efficiency and effectiveness. Training is a learning experience which has the capacity to make positive changes and reach-up to the desired objectives of the organization. It improves the ability of staff to perform efficiently and with excellence.

Development on the other hand means those learning opportunities designed for start to grow. Development is not primarily skill oriented. Instead provide the general knowledge and attitudes which will be helpful to staff in higher positions. Efforts towards development often depend on personal drive and ambition. Development activities and programmes provides knowledge about management principles and techniques, human relations, work environment and organizational analysis and the like is useful for better management of an organization.

Development programmes are regarded as specific framework for helping staff to develop their personal and professional skills, knowledge, activities, behavior and consequently improve their ability to perform specific task in the organization. Ekpo (1989) is of the view that manpower development could be seen as organization specific. This is because it is largely a function of organization manpower needed or job specification. Manpower development focuses on training

human resource that needed for effective performance in the organization (Drucker, 1999). It is geared towards updating workers with new techniques.

Methods of Manpower Development

According to Adeniyi (1995) manpower development methods include: study, job rotation, self-development, orientation, assignment, committee/group work method, special course, and professional bodies/membership part-time programmes. Other methods as Oshionebo (2003) mentioned are: mentoring professional certification and career planning. Note that, no matter what method of staff development is used; what counts is that staff development programmes should be designed to meet specific objectives which contribute to both the staff and organizational effectiveness.

Insight into Training and Development

Vast amount of published research has highlighted the types of relationship that exists between training, development and common organization measures like performance, productivity, competitive edge and effectiveness. In this study, the researcher concentrated more on these ties and links in between that bring together the concepts of training and development and then determines the impacts of these combined concepts on performance and productivity in an organization.

Training and development should be seen not only as the thread that ties together all human resource practice but also as the instrument for establishing and signaling when and how work practices should change (<https://www.linkedin.com/pulse/effects-training-development-employee-performance-action-ph-d>). When brought together, training and development is considered as very essential part of the human resource development in every organization

In his research Armstrong (2000) states that there exists a relationship between training and development and staff performance, Training is the method of learning new things through education, practice and experience while development relatively will make the staff to have more awareness and readiness regarding the requirements and requisites of expected future jobs and hence, prepare or develop them effectively to contribute to the organization goals. Research papers, such as Birdi et al (2008) concluded that training and development are indispensable

strategic tools for effective individual and organizational performance, thus, organization are investing in it with confidence that it will earn them a competitive advantage. However, for any organization to achieve its stated goals and objectives in this competitive world, adequate and relevant training and development of staff cannot be over- emphasized

Insight into Performance and Productivity

Training and development are aid to have significant impact on staff performances well as organizational performance. In general, the term performance is a broader based concept which includes; effectiveness, efficiency, quality, consistency and normative measures.

According to Cook (2000), the delimitation of performance is the achievement of specific task which is measured against predetermined standards of accuracy, completeness, speed and cost. Efficiency and effectiveness are major components of performance which can be emphasized through training and development to increase performance of individual. Organizational performance on the other hand can also be defined as the organization's ability to attain its goals by using resource in effective and efficient manner. Hence, the success or failure of organization depends on staff performance.

Productivity more specifically is the measure of how specified resources are managed to accomplished timely objectives as stated in terms of quantity (Nasir, 2013). Training and development can be regarded as the major factor in the creation of staff human capital, which determines the long-term productivity of an employee's behavior (Nel et al, 2004). Similarly, to this is the study of Singh (2012) in which he examined the role of training and development as a prominent determination for improving human resource productivity. He forwards in his study that training and development play a very important role in improving the productivity of human resource and the organization in general. Hence, highly developed and well-trained work force is central to performance, productivity and success of organization.

Theoretical Framework

General human capital theories support the tendency towards investment in staff training and development because it is considered very beneficial for the performance and productivity of staff and performance of an organization as a Whole. The theoretical framework is drawn graphically based on the ground of the reviewed literatures. Here it is theorized that the independent variables (TVS) which is training and development had a positive impact on the dependent variables (DVS) i.e. performance and productivity of staff and relatively of the organization as a whole.

Methodology

A descriptive survey research design was adopted. The target population comprised academic and non-academic staff of Yobe State University, Federal University Gashua, and Sa'adu Zungur University. Using Yamane's (1967) formula, a sample size of 300 was selected. Simple random sampling was used to select participants. Questionnaire was administered directly to respondents in the three sampled universities. Ethical considerations such as informed consent, confidentiality, and voluntary participation were ensured throughout the data collection process. Frequency and percentage were used to answer the research questions.

Results

The results is presented as follows:

Determination of staff training and development in young growing Universities:

Table 1: The University has a clear policy on staff training and development

Variables	Number of Respondents	Percentage (%)
S A = 5	200	66.5 %
A = 4	100	33.5%
N =3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 200 (66.5 %) strongly agree that university has a clear policy on staff training and development, However 100 (33.5 %) agree.

Table 2: Staff are regularly given opportunities for professional development

Variables	Number of Respondents	Percentage (%)
S A = 5	125	41.66 %
A = 4	75	24.99 %
N =3	75	24.99 %
D = 2	25	8.33 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 125 (41.66 %) strongly agree, 75 (24.99 %) agree, 75 (24.99%) neutral, however 25 (8.33 %) disagree.

Table 3: The training Programme offered are relevant to my job responsibilities

Variables	Number of Respondents	Percentage (%)
S A = 5	125	41.66 %
A = 4	75	24.99 %
N =3	75	24.99 %
D = 2	25	8.33 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 125 (41.66 %) strongly agree, 75 (24.99 %) agree, 75 (24.99%) neutral, however 25 (8.33 %) disagree.

Table 4: The University provide equal access to training opportunities for all staff

Variables	Number of Respondents	Percentage (%)
S A = 5	200	66.5%
A = 4	60	20.1 %
N =3	10	2.9 %
D = 2	30	10.5 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 200 (66.5 %) strongly agree, 60 (20.1 %) agree, 10 (2.9%) neutral, however 30 (10.5 %) disagree.

Table 5: The management encourage continuous learning among staff

Variables	Number of Respondents	Percentage (%)
S A = 5	200	66.67 %
A = 4	75	24.99 %
N =3	25	8.33 %
D = 2	00	0. %
S D = 1	00	0. %
Total	300	100%

The above table shows majority of the respondents 200 (66.67 %) strongly agree, 75 (24.99 %) agree, 25 (8.33%) neutral.

What are the relationship between training, performance and development?

Table 6: staff who undergoes training perform better in their roles.

Variables	Number of Respondents	Percentage (%)
S A = 5	200	66.66 %
A = 4	80	26.66 %
N =3	20	6.66 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 200 (66.66 %) strongly agree, 80 (26.66%) agree, however 20 (6, 66%) neutral.

Table 7: Training and development improve staff motivation and commitments

Variables	Number of Respondents	Percentage (%)
S A = 5	150	50 %
A = 4	150	50 %
N =3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows the respondents 150 (50%) strongly agree, Meanwhile 150(50%) agree.

Table 8: There is a noticeable increase in productivity after attending training programs

Variables	Number of Respondents	Percentage (%)
S A = 5	200	66.66 %
A = 4	80	26.66 %
N =3	20	6.66 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 200 (66.66 %) strongly agree, 80 (26.66 %) agree, meanwhile 20 (6.66%) neutral.

Table 9: Training employee contribute more effective to the university goals.

Variables	Number of Respondents	Percentage (%)
S A = 5	75	24.99 %
A = 4	200	66.67 %
N =3	25	8.33 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 200 (66.67 %) agree, 75 (24.99 %) strongly agree, meanwhile 25 (8.33%) neutral.

Table 10: Lack of training negatively affect staff performance

Variables	Number of Respondents	Percentage (%)
S A = 5	150	50 %
A = 4	150	50 %
N =3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows the respondents 150 (50 %) strongly agree, meanwhile 150 (50%) agree.

To recommend strategies for improving staff training and development**Table 11:** more training on staff communication

Variables	Number of Respondents	Percentage (%)
S A = 5	150	50 %
A = 4	150	50 %
N =3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows the respondents 150 (50 %) strongly agree, meanwhile 150 (50%) agree.

Table 12: Increased staffing to reduce workload

Variables	Number of Respondents	Percentage (%)
S A = 5	200	66.5 %
A = 4	100	33.5 %
N =3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 200 (66.5 %) strongly agree, meanwhile 100 (33.5%) agree.

Table 13: Regular feedback and coaching

Variables	Number of Respondents	Percentage (%)
S A = 5	100	33.5 %
A = 4	200	66.5 %
N =3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows the majority of the respondents 200 (66.5 %) agree, meanwhile 100 (33.5%) strongly agree.

Table 14: Improved workplace environment

Variables	Number of Respondents	Percentage (%)
S A = 5	250	62.5
A = 4	50	37.5
N = 3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows majority of the respondents 250 (62.5 %) strongly agree, meanwhile 50 (37.5%) agree.

Table 15: Recognition and awards for good performance

Variables	Number of Respondents	Percentage (%)
S A = 5	150	50 %
A = 4	150	50 %
N = 3	00	0 %
D = 2	00	0 %
S D = 1	00	0 %
Total	300	100%

The above table shows the respondents 150 (50 %) strongly agree, meanwhile 150 (50%) agree.

Discussion

The general objective of this research is to study the value of staff training and development by way of assessing the impact and manifestation of performance and productivity in the case of Yobe State University, Federal University Gashua and Sa'adu Zungur University located in the North Eastern part of Nigeria. According to responses training and development activities brought new potentials for staff when performing task and resulted to increased performance and productivity. Descriptive statistics analyzed in percentage provides evidence that training and development are essential key variables that definitely lead to enhancement in performance and increased productivity. Toward a better understanding of the impacts of training and development, this research points out the importance of training and development for workforce and the university, determines the major types of training and development programmes,

discusses the extend of relationship that exists between training and development and decides the overall impact on staff performance, productivity and overall organizational performance. It also offers some guidelines for human resource managers to design effective and diversified programmes for training and development. This is in line with the view of Ewuim and Ubochi (2007), they suggested that methods of training and development of workers include on the job training such as; demonstration, apprenticeship, coaching and so on, their studies further revealed that job instruction and delegation, special projects, group discussions, programmed instructions, simulation conferences, case study, role playing, job rotation, lecturing and so on, were also among the methods of training and development of man-power used by organizations for effective and up-graded organizational performance. In agreement with real literature, selection of such methods is commonly used because they are tested and found reliable for increased productivity and self-reliable, if fully practiced by organization.

The findings of the study are in support of other research papers on training and development. In line with this study is Dabale et al (2014) it was established from their study that there is a strong positive relationship between training, development and performance. From the findings, most respondents strongly agreed that training develops skills and competences to improve performance. It helps to reconcile the gap between what should happen and what is happening to increase the level of performance. Having subjected the collected data to empirical analysis with the use of descriptive statistics, the results of the findings indicated that training and development affects staff performance and organizational effectiveness. It is important for the survival of any organization it is also imperative for effective performance of staff, enhancement of ability to adapt to the changing and challenging working environment and technology for better performance, increased staff knowledge to develop creative and problem-solving skills. The result of the study showed that organizational performance and productivity depend largely on staff training and development.

In view of this, the researcher recommended that organization should have regular well thought training and development programmes for their staff. Such Programmes should be capable of raising the skills, morale and productivity of staff. The researcher also called for the involvement of expert in the design and implementation of staff training and development program in the

organization. This is because engaging the staff, experts, and management in such actions will avoid waste, both in terms of time and resources, by providing what is actually needed and very relevant to the needs of staff: When this is done, the objectives of staff training and development will be realized, thus repositioning the organization on the pedestal of higher performance.

Conclusion

Based on the findings of this study, the researchers concluded that, investing in training and development is imperative and valuable for any organization which will certainly realize returns on its investment in training and developing its workers. While effective development programmes allow for organization to maintain a workforce that can adequately replace staff who leave the organization or moved to other areas. On the individual level members of staff are encouraged to carry out self-assessment, where they are expected to identify their needs for improvement. It was further concluded that training and development cannot be discarded from the university: and young growing universities have to set up and implement an advanced roadmap for training and development as it enhances staff performance; and the training and development programmes is paramount important in order to achieve excellent and competence in knowledge, skills, ability, attitude and behavior to meet rapid changes in both technology and work practices.

Recommendations:

The researchers recommended as follows:

1. For training to play a positive role in the organization, the management should ensure that the policies about training and development are clear, simple and the objectives and should be communicated to the trainees. They should have compulsory training programmes for all staff in order to improve the knowledge and understanding of organizational strategies and objectives, and provide mixed and diversified methods of training and development for staff to acquire skills, knowledge and ability from different sources and in different delivery styles.
2. Quality and relevant training and development programmes should be organized in a way to meet with staff expectation for improved productivity.

3. Staff should comprehend the significance of training and development programmes to enhance their professional skills and ability. They should participate actively and enthusiastically in training and development activities to strengthen their skills and knowledge.

4. Staff should always identify their aspirations and abilities, and through counseling recognize what training and development are required for a particular career. Here development and succession planning will also play a great role. Career progressions projection plans, training and development projections should be made available to each staff so that they know exactly their contribution to organization and its overall performance.

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COMPARATIVE ANALYSIS OF PHYSICAL AND MENTAL WORKLOAD IN AMATEUR VOLLEYBALL TEAMS WITH AND WITHOUT A LIBERO PLAYER BY

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ABSTRACT

Comparative Analysis of Physical and Mental Workload in Amateur Volleyball Teams With and Without a Libero Player. The Libero is a key defensive player for receiving serves and defending attacks, which can have an important impact on the players' movement and mental load during a match. The purpose of this study was to compare the physical and mental workload of playing with and without the Libero in an amateur volleyball team. A randomized crossover design of 12 male amateur university students with a mean age of 19.17 ± 1.11 years were used to study the effects of the Libero. The match was simulated in 4 conditions: Team A With a Libero vs. Team B Without a Libero, Team A Without a Libero vs. Team B With a Libero, both teams with a Libero, and both teams without a Libero. The results indicated that AvrHR and PHR of the Libero team were both lower than the non-Libero team ($P < 0.05$), as well as sRPE of the Libero team being lower than the non-Libero team, and NASA-TLX for the Libero team being lower than the non-Libero team ($P < 0.05$). Both CMJ teams showed reduced jump height after the competition, with no significant difference between teams with or without a Libero. While the Libero helped manage physical and mental workload, they did not affect jump performance.

Key Words: Indoor Sports, Libero, Mental Workload, Volleyball

Introduction

The Libero is a player specializing in receiving serves, digging balls from attacks, and defending against offenses in volleyball games. They are generally unable to attack or set up games, but having or not having this position in the team can affect the players' physical and mental performance in many ways. Having a Libero player helps to strengthen the team's defense effectively, which has a positive effect on reducing errors in defense (10). This position plays an important role in increasing the ability to respond to attacks and can reduce errors in the receiving phase (21). Meanwhile, a team without the Libero position, players in other positions are more responsible for defending the ball, which can greatly increase the responsibility and pressure on the players. Therefore, the strategic inclusion of a Libero cannot only enhance defensive capabilities but also promote better teamwork and coordination among players. In addition, the absence of the libero can reduce the team's overall defensive performance (16). This

includes the impact on mental performance (e.g., self-confidence, ability to cope with pressure, and teamwork).

Physiological responses in volleyball are often measured in response to on-field workloads in a match, including speed of movement, ability to defend against attacks, and ability to maintain balance in play (18). In the case of volleyball, the Libero plays a key role in receiving serves and digging from attacks, and the accuracy of these tasks helps to improve the team's defense (22). Additionally, the Libero's performance can significantly influence the overall dynamics of the game, as their effectiveness in these defensive maneuvers often determines the outcome of critical points during matches (1,8,15).

Studies have shown that Liberos tend to have faster and more accurate movements compared to players in other positions, such as setters or outside hitters, who are responsible for various types of attack and defense (9). However, in a match between a team with and without liberos, there may be differences. Players on a team without a Libero may have to move in different ways, since other positions are responsible for more defensive work, which may result in increased fatigue and workload, especially in receiving high-speed balls or defending against opponents' attacks (19). In addition to the physical performance differences, the presence of a libero in a team can also significantly affect the mental performance of the players. Having a Libero player who is skilled in receiving and defending allows the team to focus on their role without having to take on the entire defensive load.

The differences in movement and pressure handling on the field suggest that the presence of a Libero allows the team to be more effective in defense and reduces the workload of players in other positions. In addition, designing a training program that involves appropriate simulation can improve the performance of the team with or without the Libero. The appropriate method can help build defensive confidence for players on teams without a Libero and develop faster and more accurate movement skills, which will help the players to better cope with the opponent's attacks.

Certainly, previous studies (8,9,18,19,22) have shown that the Libero influences the outcome of competitions in professional sports, so this study attempted to find the answer by comparing competitions with and without a Libero in amateur athletes, which may have different effects on physical and mental load in the context of amateur athletes.

Methodology

The participants in this study were 12 amateur volleyball players in Jigawa State College of Education Gumel, Nigeria, who were students in Department of Human Kinetic. They had a mean age of 19.17 ± 1.11 years, a mean height of 175.79 ± 4.40 cm, a mean weight of 70.44 ± 4.32 kg, and a mean body mass index (BMI) of 22.85 ± 0.37 kg/m². Other data are shown in Table 1. They were selected by simple random sampling based on the research of Fernandez-Echeverria et al. (5). All selected players received continuous training and were randomly divided into 2 Groups based on their countermovement jump (CMJ) performance data. Group A (Team A) consisted of player numbers 1,3,5,7,9, and 11, and Group B (Team B) consisted of player numbers 2,4,6,8,10, and 12. The participants were required to have at least 2 years of amateur competition experience, undergo at least 6 months of intensive training, and attend at least 3 training sessions per week for 6 weeks, as well as have experience in provincial-level or higher competitions but not professional competitions.

Procedures Research Design

This research study used a randomized crossover experimental design with 12 male amateur volleyball players. Before entering the baseline measurement process, including height, weight, BMI, Yo-Yo IR1 and the counter-movement jump (CMJ) test, the data were sorted and divided into groups. The simulation of the competition consisted of 4 formats, with different competition conditions in each match: Match 1, Team A With a Libero vs. Team B Without a Libero; Match 2, Team A Without a Libero vs. Team B With a Libero; Match 3, both teams had a Libero player; and Match 4, both teams did not have a Libero player. The order of the experimental conditions was controlled to prevent the effects of fatigue and relearning. After each experimental match, there was a break of at least 48 hours. Data collection was conducted from 6:00 to 7:30 a.m. in an indoor sports hall with a temperature of 18 to 25 degrees Celsius, with at least 3 research assistants with experience in volleyball supervising the entire testing process. The participants were asked to refrain from exercise for at least 24 hours prior to the test and to refrain from eating or drinking energy drinks for 3 hours prior to the test.

Experiment Procedures

Before the simulation, the participants started with a warm-up by jogging around the volleyball court for 3 rounds. Then, they did static and dynamic stretching and light jumping for 5 minutes.

After that, the athletes practiced their movement skills, starting with specific movements such as arms and legs, continuing to the whole-body movement for about 3 minutes, followed by practice passing and receiving the ball at a distance not exceeding 3 meters, including practicing movement within 3 meters according to the specified pattern for 2 rounds. Then, all the athletes rested to prepare for the real test for 3 minutes. Before starting the simulation experiment, heart rate was measured using a Polar H10 chest strap, and the rate of perceived exertion (sRPE) was assessed. Then, the athletes entered the simulation competition. Everyone competed under the standard rules, the only difference being the allocation of libero players (with or without liberos in the team) to match the experimental conditions. Throughout the competition, heart rate was continuously monitored. In addition, a research assistant with experience in volleyball acted as a motivator in the role of a coach to make the experimental environment as close to the real situation as possible. After the simulated competition, the CMJ test was repeated immediately to assess the changes in physical fitness after the competition, followed by an assessment of mental workload using the NASA-TLX questionnaire to reflect the mental fatigue caused by each competition condition. All the data were used for analysis and conclusions in the next step.

Countermovement Jump Test

The countermovement jump (CMJ) with arms swing is a widely used method to assess lower-body explosive power, which is important for volleyball players. The CMJ test was performed before and after the match to track changes in muscle power performance (12). It starts with the stance on the force platform with your feet shoulder-width apart and your arms at your sides. Bend your body slightly in a quick tempo and swing your arms back. Bend both legs, straighten your knees, hips, and ankles, and swing your arms forward and over your head. Keep your body straight and try to float as high as possible and land with your knees slightly bent to absorb impact.

Heart Rate Monitoring

The heart rate (HR) was continuously monitored in the simulated competition using the Polar H10 chest strap with Polar Team application for the analysis of average heart rate (AvrHR) and percentage of heart rate (PHR). The heart rate measurements were taken during the competition, with pauses between sets to assess the physiological response to the workload in the conditions with and without the libero. All athletes wore Polar H10 devices throughout the competition to

ensure accurate and consistent data collection across the experimental conditions, expressed as a percentage of heart rate.

Rate of Perceived Exertion

The modified rate of perceived exertion (sRPE) was used immediately after each match to assess perceived fatigue on a scale of 1 to 10 (6). The sRPE assessment is considered appropriate for use in volleyball (20).

Mental Workload

The NASA Task Load Index (NASA-TLX) was conducted after the end of each competition condition to measure the level of mental workload that the athletes perceived in team sport. The NASA-TLX is a standard instrument used to measure the subjective mental load and the cognitive load, especially in the context of sports (3). In this study, athletes used the NASA-TLX to reflect their feelings in various aspects, including mental demand, physical demand, temporal demand, performance, effort, and frustration. Using this assessment helps in understanding more clearly the impact of the Libero position on the athletes' mental fatigue and playing strategies.

Statistical Analyses

The quantitative data in this study was analyzed using the computer application SPSS (version 24, IBM Corporation, Illinois, USA). We utilized descriptive statistics to determine the mean (X) and standard deviation (SD) of the following variables: height, weight, body mass index, average heart rate (AvrHR), Percentage of heart rate (PHR) Countermovement jump (CMJ), the rate of perceived exertion (sRPE), and the NASA task load index (NASA-TLX).

The Shapiro-Wilk test was used to determine whether the data were normally distributed. The statistical significance was defined at $P < 0.05$. The independent sample t-test was used to compare AvrHR, PHR, sRPE, and NASA-TLX variables among groups. The mixed model ANOVA was used to analyze interaction (condition x period) for CMJ variables.

Results

The AvrHR in the with Libero condition was significantly lower than without Libero (149.79 ± 9.18 vs. 162.18 ± 5.79 , $P < 0.05$), as was the percentage of PHR, which was significantly (75.34 ± 5.20 vs. 80.85 ± 2.92 , $P < 0.05$). For sRPE in the with Libero condition, it was significantly lower than in the Without Libero condition (6.50 ± 0.88 vs. 7.90 ± 0.72 , $P < 0.05$). The NASA-TLX

score with Libero condition was significantly lower than without Libero condition (42.75 ± 4.04 vs. 52.95 ± 3.86 , $P < 0.05$), all shown in Table 2 and Figure 1.

Table 1. Information on the General Physical Characteristics of the Participants.

Physical Characteristics	Mean $\pm$ SD
Age (years)	19.17 $\pm$ 1.11
Height (cm)	175.79 $\pm$ 4.40
Weight (kg)	70.44 $\pm$ 4.32
BMI (kg/m ²)	22.85 $\pm$ 0.37
VO2Max (ml/kg/min)	46.84 $\pm$ 2.38

Table 2. A Comparison of the Differences of Variables in Each Condition.

Variables	Group	Mean	P
AvrHR (bpm)	With Libero	149.79 $\pm$ 9.18	0.023*
	Without Libero	162.18 $\pm$ 5.79#	
PHR (%)	With Libero	75.34 $\pm$ 5.20	0.030*
	Without Libero	80.85 $\pm$ 2.92#	
sRPE	With Libero	6.50 $\pm$ 0.88	0.001*
	Without Libero	7.90 $\pm$ 0.72#	
NASA-TLX	With Libero	42.75 $\pm$ 4.04	0.001*
	Without Libero	52.95 $\pm$ 3.86#	

*The differences between conditions were statistically significant, $P < 0.05$ #The mean is statistically significantly higher, $P < 0.05$

Note: AvrHR=Average Heart Rate, PHR=Percentage of Heart Rate, sRPE=Rated Perceived Exertion, NASA-TLX=NASA Task Load Index.

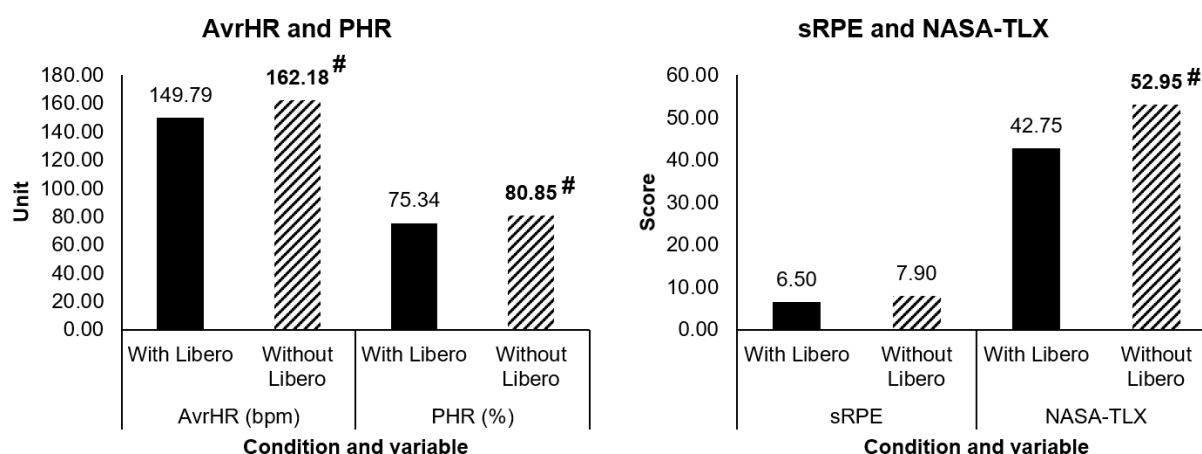


Figure 1. Difference Average of HR, Percentage HR, RPE, NASA-TLX Variables in With Libero and Without Libero Conditions.

There was no interaction between condition $\times$ period of the CMJ test ($P=0.145$). However, when analyzing the main effect, there was a statistically significant within-group difference in both conditions ($P<0.05$). In the With Libero condition, the mean pre-and post-experimental scores were 50.42 ± 2.45 and 43.63 ± 3.92 , respectively, while in the Without Libero condition, the mean pre-and post-experimental scores were 50.90 ± 2.33 and 42.60 ± 4.38 , respectively. All results are shown in Table 3.

Table 3. A Mix-Model ANOVA Analysis to Know the Interaction of CMJ in Each Condition.

Condition/Period	Pre-Match	Post-Match	Between Group	Interaction
With Libero	50.42 ± 2.45	43.63 ± 3.92		0.757
Without Libero	50.90 ± 2.33	42.60 ± 4.38		0.145
Within Group	0.001*			

*The mean is statistically significantly higher, $P<0.05$

Discussion

The results of this study found that the average heart rate (AvrHR) and percentage heart rate (PHR) of the team with the Libero player were significantly lower than those of the team without the libero player. This can be explained by the specific role and responsibilities of the Libero player's position, that focused on defense. When the team has a specialized Libero to play defense instead of a non-expert defender, the physical load on the other players overall is reduced that results in a lower average heart rate for the team (1).

In addition, the rate of perceived exertion (sRPE) of the players on teams with a Libero player was found to be lower, reflecting reduced mental and physical fatigue. The presence of Libero player reduced the frequency and intensity of vertical movement and defensive load, resulting in less need for other players, especially outside hitters and setters, to adjust their positions to help receive the ball as much as teams without Liberos (8,20). The reduction in physical workload redundancy leads to lower fatigue perceptions, especially in the sRPE system using the Borg CR-10 scale, which reflects a combination of physical and mental fatigue (6).

In the aspect of stress assessment or mental workload, measured using the NASA-TLX questionnaire, the results showed that the players in the teams with a Libero player had lower average scores than the teams without a Libero player. This can be explained by the fact that the Libero position is primarily responsible for initiating defensive plays, especially in receiving serves and offensive balls, which are continuously trained in a specialized manner so that players in other positions do not have to make urgent decisions in stressful situations as often as teams without a Libero player, resulting in reduced mental workload (3,10,13). In addition, having players with high self-confidence in this position helps create psychological stability for the overall team (4).

The results of the countermovement jump (CMJ) measurement found that the jump height of players in both teams with and without a libero player decreased significantly after the match, but there was no difference between the Groups. This is explained by the neuromuscular load caused by the competition, which has a similar effect on all positions, whether with or without a Libero (11,19). This decrease is a result of accumulated fatigue that the team cannot immediately compensate for after the competition. Although the Libero has a low competition workload and results in a lower workload for the team in other areas, the impact on the overall team in terms of CMJ is not different, because the positions that have to jump frequently, such as middle blocker and opposite, still inevitably bear the same load (7). This is consistent with the fact that jump performance has no relationship with RPE (17).

Overall, the analysis suggests that the role of the Libero has a systemic effect on reducing both the physical and mental workload of the team, especially in terms of AvrHR, PHR, RPE, and mental workload, which are consistently reduced. However, in neuromuscular fatigue indicators such as CMJ, the limitations of having a Libero in reducing physical fatigue at the team level may need to be considered in addition to the substitution strategies, rest, and more specialized training plans. Other factors should also be considered, such as the experience of the Libero, which in world-class teams tend to have players with an older average age, reflecting expertise that positively affects the team's mental workload (14). When combined with precise positioning and strategic assessment in each phase or situation of the game (8), teams with a Libero are more effective in controlling the game's tempo and reducing pressure from various situations. In

addition, in different situations, there should be training to prepare mentally to be ready for the competition as well (2).

Limitations in this Study

Although the study demonstrated the effects of having and not having a Libero in amateur volleyball players, it is limited by the fact that the duration of the match or the number of sets were the same across all simulations. Since not specifying a time limit may result in control of other variables, this may not be a suitable method for real competition situations and future studies should consider these factors.

Conclusion

Although this study focused on amateur volleyball players, the nature of the competition may be similar but may differ in terms of player performance and high-level playing tactics. The evidence clearly shows that the Libero position not only affects the team's energy allocation but also plays a psychological role in enhancing defensive stability, reducing mental workload, and helping the team to manage fatigue more effectively at the match level. Coaches should consider the results of this study together with their competition strategies to apply them in competitions. Also coaches should organize special range of training particularly to enhance and improve the skills and physical competency of a Libero prior to the match.

Recommendation

Based on the result and conclusion of this study the following recommendation was made, liberos should be given special training since he or she carries more task e.g. defensive strategies of the game, more mental workload and other physical task. Each team should at least possess two libero including reserved libero.

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SYSTEMS THINKING AS A TOOL FOR EDUCATIONAL POLICY FORMULATION IN EDUCATIONAL INSTITUTIONS IN NIGERIA: CHALLENGES AND THE WAY FORWARD

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ABSTRACT

Educational policy formulation is a critical component of educational administration, serving as a framework for achieving national educational goals and improving institutional effectiveness. In Nigeria, educational institutions operate within a complex environment characterized by rapid technological change, demographic growth, resource constraints, policy inconsistencies, and evolving societal expectations. Traditional approaches to policy formulation often focus on isolated problems without adequately considering the interconnected nature of educational systems. Systems thinking offers a holistic approach that enables policymakers and educational administrators to understand the relationships, feedback mechanisms, and interdependencies among various components of the educational system. This paper examines systems thinking as a tool for educational policy formulation in Nigerian educational institutions. The paper discusses the concept and principles of systems thinking, its relevance to educational policy development, and its application in educational administration. It further explores the challenges confronting the adoption of systems thinking in Nigeria, including inadequate data systems, bureaucratic constraints, insufficient stakeholder participation, weak monitoring mechanisms, political interference, and limited systems-thinking competencies among educational leaders. The study argues that effective policy formulation requires a comprehensive understanding of the dynamic interactions among educational stakeholders, institutions, resources, governance structures, and external environmental factors. The paper concludes that systems thinking can significantly improve policy quality, implementation effectiveness, and educational outcomes when properly integrated into educational governance processes. Recommendations include capacity building, evidence-based policymaking, strengthened stakeholder engagement, improved educational data systems, and institutionalization of systems-thinking approaches at all levels of educational administration.

Keywords: Systems Thinking, Educational Policy, Policy Formulation, Educational Institutions, Nigeria.

Introduction

Education plays a strategic role in national development by promoting human capital development, social cohesion, innovation, and economic growth. Educational policies provide the foundation upon which educational institutions operate and achieve their objectives. Effective educational policies guide decision-making, resource allocation, curriculum development, quality assurance, and institutional governance (Federal Republic of Nigeria, 2013). However, educational systems are inherently complex, involving numerous stakeholders, including government agencies, school administrators, teachers, students, parents, communities, and international development partners. The interconnected nature of these actors requires a policy formulation approach that recognizes relationships, interactions, and feedback loops within the educational system (Senge, 2006).

In Nigeria, educational policy implementation has often been challenged by inconsistencies, inadequate planning, insufficient stakeholder involvement, and weak monitoring and evaluation mechanisms (Okoroma, 2006). These challenges highlight the need for a more holistic and integrated approach to policy formulation. Systems thinking offers such an approach by enabling policymakers to understand educational institutions as dynamic systems rather than isolated entities (Meadows, 2008). This paper examines the application of systems thinking as a tool for educational policy formulation in Nigerian educational institutions, identifies challenges affecting its adoption, and proposes strategies for effective implementation.

Concept of Systems Thinking

Systems thinking is an analytical approach that focuses on understanding the relationships and interactions among components of a system rather than examining individual elements in isolation. The concept emerged from General Systems Theory developed by Bertalanffy (1968), who argued that organizations function as interconnected systems composed of interdependent parts.

According to Senge (2006), systems thinking is the discipline that enables individuals and organizations to see wholes rather than parts and to understand patterns of change rather than static events. It emphasizes the identification of feedback loops, causal relationships, system

structures, and dynamic interactions that influence organizational outcomes. In educational institutions, systems thinking recognizes that policies affecting curriculum, staffing, funding, infrastructure, technology, and student welfare are interconnected. A change in one area often influences outcomes in other areas. Consequently, educational policies should be formulated with consideration for the entire educational ecosystem (Banathy, 1992).

Theoretical Foundation: General Systems Theory

General Systems Theory (GST) provides the theoretical basis for systems thinking. Bertalanffy (1968) proposed that organizations are open systems that interact continuously with their environments through inputs, transformation processes, outputs, and feedback mechanisms.

In educational institutions:

- ✓ Inputs include students, teachers, funding, facilities, and policies.
- ✓ Processes involve teaching, learning, administration, and management.
- ✓ Outputs include graduates, research outcomes, and societal contributions.
- ✓ Feedback consists of evaluations, assessments, stakeholder responses, and performance indicators.

GST suggests that effective educational policies should consider all components of the educational system and their interactions to ensure sustainable outcomes (Bertalanffy, 1968).

Principles of Systems Thinking in Educational Policy Formulation

The principles of systems thinking in educational policy formulation is presented as follows:

- 1. Holistic Perspective:** Systems thinking encourages policymakers to examine the entire educational system rather than focusing on isolated issues. Educational challenges such as poor academic performance may result from multiple interacting factors, including inadequate funding, teacher shortages, curriculum deficiencies, and socioeconomic conditions (Meadows, 2008).

2. **Interdependence:** Educational institutions comprise interconnected subsystems. Decisions regarding funding, staffing, curriculum, and technology affect one another. Policy formulation should therefore account for these interdependencies (Senge, 2006).
3. **Feedback Mechanisms:** Systems thinking emphasizes the role of feedback in policy improvement. Monitoring and evaluation provide information that policymakers can use to revise and strengthen educational policies (Banathy, 1992).
4. **Dynamic Complexity:** Educational systems operate within changing social, economic, political, and technological environments. Systems thinking enables policymakers to anticipate unintended consequences and adapt policies accordingly (Meadows, 2008).
5. **Continuous Learning:** Systems thinking promotes organizational learning and evidence-based decision-making through ongoing assessment and adaptation (Senge, 2006).

Systems Thinking and Educational Policy Formulation in Nigeria

Educational policy formulation involves identifying educational needs, establishing goals, designing strategies, implementing interventions, and evaluating outcomes (Federal Republic of Nigeria, 2013). Thus, systems thinking contributes to educational policy formulation in several ways.

1. **Evidence-Based Policy Development:** Systems thinking encourages the use of comprehensive data and analysis to identify root causes of educational challenges. Rather than addressing symptoms, policymakers can develop interventions that target underlying systemic issues (Meadows, 2008).
2. **Stakeholder Engagement:** Educational policies affect multiple stakeholders. Systems thinking promotes collaborative policymaking by involving teachers, students, parents, administrators, employers, and community leaders in policy development processes (UNESCO, 2021).
3. **Policy Coordination:** Educational policies often overlap with policies in health, technology, labor, and social welfare sectors. Systems thinking facilitates policy coherence and inter-sectoral collaboration (OECD, 2020).

4. **Long-Term Planning:** Systems thinking supports strategic planning by enabling policymakers to anticipate future challenges and opportunities within the educational system (Senge, 2006).
5. **Improved Policy Implementation:** Understanding system interactions enhances implementation effectiveness by identifying potential barriers, resource requirements, and stakeholder concerns before policy deployment (Banathy, 1992).

Benefits of Systems Thinking in Nigerian Educational Institutions;

Systems thinking in Nigerian educational institutions has the following benefits:

1. **Enhanced Decision-Making:** Systems thinking improves decision-making by providing a comprehensive understanding of educational issues and their underlying causes (Senge, 2006).
2. **Improved Resource Allocation:** A systems approach enables policymakers to allocate resources strategically based on institutional needs and priorities (Federal Republic of Nigeria, 2013).
3. **Increased Policy Effectiveness:** Policies developed using systems thinking are more likely to achieve intended outcomes because they address interconnected factors affecting educational performance (Meadows, 2008).
4. **Strengthened Accountability:** Systems thinking promotes transparency and accountability through continuous monitoring, evaluation, and stakeholder feedback (UNESCO, 2021).
5. **Sustainable Educational Development:** The approach supports long-term institutional resilience and sustainable educational improvements (OECD, 2020).

Challenges of Applying Systems Thinking in Educational Policy Formulation in Nigeria

The challenges of applying systems thinking in educational policy formulation in Nigeria are:

1. **Inadequate Educational Data Systems:** Reliable data are essential for systems analysis and policy formulation. Many Nigerian educational institutions lack robust data

collection and management systems, limiting evidence-based policymaking (World Bank, 2022).

2. **Bureaucratic Constraints:** Complex administrative procedures often delay policy development and implementation, reducing responsiveness to emerging educational challenges (Okoroma, 2006).
3. **Political Interference:** Frequent changes in political leadership may result in policy discontinuity and inconsistent implementation of educational reforms (Federal Republic of Nigeria, 2013).
4. **Limited Systems Thinking Competencies:** Many educational administrators and policymakers have limited training in systems thinking methodologies, reducing their ability to apply systems approaches effectively (UNESCO, 2021).
5. **Weak Monitoring and Evaluation Mechanisms:** Monitoring and evaluation systems are often underdeveloped, limiting opportunities for feedback and policy improvement (World Bank, 2022).
6. **Resource Constraints:** Insufficient funding, inadequate infrastructure, and limited human resources hinder comprehensive policy analysis and implementation (Federal Ministry of Education, 2021).
7. **Stakeholder Exclusion:** Policy formulation processes sometimes exclude key stakeholders, resulting in limited ownership and reduced implementation success (UNESCO, 2021).

The Way Forward

Stated below will serve as the way forward:

1. **Institutionalizing Systems Thinking in Educational Governance:** Educational institutions should adopt systems thinking as a core framework for policy development, implementation, and evaluation.

2. **Capacity Building:** Government agencies and educational institutions should provide professional development programs on systems thinking, strategic planning, and policy analysis for educational administrators and policymakers.
3. **Strengthening Educational Data Systems:** Investments should be made in educational management information systems (EMIS) to improve data collection, analysis, and utilization.
4. **Promoting Stakeholder Participation:** Inclusive policymaking processes should engage teachers, students, parents, communities, and private-sector partners.
5. **Enhancing Monitoring and Evaluation:** Comprehensive monitoring and evaluation frameworks should be established to generate feedback for continuous policy improvement.
6. **Encouraging Intersectoral Collaboration:** Educational policymakers should collaborate with health, technology, finance, and labor sectors to address complex educational challenges holistically.
7. **Leveraging Technology:** Digital technologies, data analytics, and artificial intelligence can support systems analysis and evidence-based policy formulation.

Conclusion

Educational institutions operate within complex and interconnected environments that require comprehensive and adaptive policy frameworks. Systems thinking provides a powerful tool for educational policy formulation by enabling policymakers to understand relationships, feedback mechanisms, and systemic interactions that influence educational outcomes. In Nigeria, systems thinking can improve policy quality, implementation effectiveness, resource utilization, stakeholder engagement, and institutional performance.

Despite its potential benefits, the adoption of systems thinking faces challenges such as inadequate data systems, bureaucratic inefficiencies, political interference, limited professional competencies, and resource constraints. Addressing these challenges requires strategic investments in capacity building, data infrastructure, stakeholder participation, and monitoring

systems. Integrating systems thinking into educational governance will contribute significantly to sustainable educational development and improved learning outcomes across Nigerian educational institutions.

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ISSUES AND CHALLENGES ON INTEGRATING ARTIFICIAL INTELLIGENCE IN CLASSROOM MANAGEMENT TECHNIQUES AT BASIC EDUCATION LEVELS IN NIGERIA

BY

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ABSTRACT

The rapid emergence of Artificial Intelligence (AI) in education through tools such as intelligence tutoring systems, predictive analysis and generative technologies like ChatGPT- has redefined traditional classroom dynamics and teaching levels. This paper explores integration of Artificial intelligence in classroom management techniques to improve curriculum implementation at basic education levels in Nigeria. Further it investigates how AI tools can support educators in managing classrooms more efficiently, promoting learner engagement, and aligning instructional delivery with national curriculum standards. Drawing on recent theoretical frameworks such as Technological Pedagogical Context Knowledge (TPACK), the SAMR model, the connectivist learning theory- this paper argues for a structured basic education curriculum that integrates AI ethics, critical digital literacy and hands on training with AI tools. It also investigates global best practices from countries like Finland and Singapore that are proactively embedding AI competencies in teacher preparation. The study proposes targeted training, policy development and institutional investments to enable safe, inclusive and effective AI integration. By leveraging AI appropriately, basic education can advance curriculum quality and equity while contributing to the goals of sustainable development in education.

Key Words: AI, Classroom Management. Curriculum Implementation, Basic Education, Teacher Education

Introduction

Classroom management technology is a critical component of effective teaching and learning especially within basic education where diverse learners needs complex over population and limited resources. Often create significant challenges in Nigeria, basic education particularly in Nigeria face ongoing difficulties in delivering quality education, these include large class size, limited teacher-student interaction, low engagement levels and a mismatch between curriculum context and implementation strategies (Ololube, 2013).

Traditional curriculum implementation techniques, thought valuable often falls short in addressing these issues within the context of modern education. AI has emerged globally as a

disruptive force in teacher education sector, offering tools that can automate, personalize and enhance the learning experience. In particular, AI can improve curriculum implementation through systems such as facial recognition for attendance, automated lesson planning, real-time behavioural analysis, adaptive learning platforms and intelligent tutoring systems. (Luckin et-al 2016 in Ibrahim, 2025). These technologies help educators better manage time, student behaviour and instructional effectiveness. Globally, countries like China the United States and Finland are leading in educational AI adoption, showcasing improvement in classroom efficiency and learning outcomes (Holmes et.al., 2019).

In contrast, the application of AI in many African educational institutions remains in its infancy. In Nigeria, despite policy emphasis, digital transformation, issues such as poor internet infrastructure, limited digital literacy, lack of training and ethical concerns about surveillance and privacy hinder AI's adoption in teaching and learning (Adedoyin and Soykan, 2020). Nevertheless, integrating AI into classroom management is essential for aligning basic education sector with global trends and for supporting the attainment of sustainable development goal for quality education for all. Classroom management encompasses more than discipline; it involves managing time effectively addressing behavioural issues, fostering students' motivation and ensuring instructional delivery aligns with curriculum goals (Emmer & Evertson, 2016). Poor classroom management undermined curriculum implementation, leading to disengaged students and low academic performance AI can enhance this by automating repetitive tasks, providing real-time data on student engagement and supporting inclusive teaching strategies (Zawacki-Richter et.al, 2019). In doing so, it allows teachers to focus more on pedagogy and student-centered learning.

The integration of AI in education has been widely researched in recent years, with scholars highlighting its potential to reshape curriculum delivery and classroom management. AI enables the automation of administrative tasks, enhancement of personalized learning, and the improvement of decision making through data analytics (Luckin et.al, 2016). These capabilities have led to its rapid adoption in many advanced education systems. However, in developing countries like Nigeria, the use of AI in classroom settings remains limited, despite growing awareness of its benefits (Zawacki-Richter et.al., 2019). AI in education function through

machine learning algorithms that analyse patterns in student behaviour and academic performance.

These tools provide real-time feedback, automate attendance, assess engagement levels and personalize content delivery (Homes, et.al., 2019). Examples include Intelligent Tutoring System (ITS). Learning analytics dashboards and AR-driven behavioral monitoring tools. These applications allow teachers to identify students who are struggling, offer targeted intervention and manage classrooms more efficiently (Chen et., Al., 2020). In many developed countries, AI has helped reduce administrative burdens and improved instructional quality.

Classroom management refers to the strategies used by educators to maintain order, foster engagement and create a conducive learning environment. Poor classroom management can lead to student disengagement, lower academic achievement and curriculum implementation challenges (Emmer and Evertson, 2016). AI tools can support these efforts by tracking attendance automatically, identifying behavioural patterns, and detecting early signs of disengagement through facial expression analysis or voice tone detection (Lu et al., 2021). Such interventions help teachers adjust strategies in real-time, ensuring curriculum delivery remains on track. Globally, several countries have adopted AI to transform education, in China, AI-powered classrooms use facial recognition and biometric sensors to monitor students focus, alerting teachers when engagement drops (Zhao et al., 2019).

Finland has implemented adaptive learning platforms that tailor instruction to individual students, improving learning outcomes (Schiff, 2020).

In the United States, AI chatbots assist students with queries, allowing teachers more time for lesson delivery. These examples demonstrates the potential for AI to stream line classroom management and strengthen curriculum implementation.

Despite the global progress, Nigerian educational institutions lag in AI adoption challenges include poor digital infrastructure, high internet costs, low computer literacy among staff and lack of clear policy on AI usage in education (Adedoyin and Soykun, 2020).

At the basic education levels in Nigeria the curriculum is often delivered through conventional methods that are limited in addressing the need of diverse learners moreover, time consuming tasks such as manual attendance and paper-based assessments reduce instructional time. These

inefficiencies contribute to gaps in curriculum implementation and student achievement (Okoye and Nwator, 2022).

While AI offers significant benefits, its uses raises ethical concerns such as data privacy, surveillance, bias in algorithms and the digital divide. These issues must be addressed to ensure equitable and responsible integration. For instance, facial recognition systems many misinterpret expressions in ethnically diverse classrooms leading to inaccuracies in behavioural monitoring (Crawford and Paglen, 2021). Informed consent, data protection laws, and staff training are crucial to mitigating these risks in educational contexts.

Theoretical Framework

To understand how classroom management can be impacted through AI technology and its implication on basic education, it is essential to ground this exploration in relevant theoretical framework. This offer insights into how teaching and learning can be re-shaped by technology while maintaining a focus on learner engagement, critical thinking, and teacher agency.

The integration of Ai in classroom management and curriculum implementation must be guided by relevant educational theories that explain how technology interacts with pedagogy and learner engagement. This section outlines key theoretical perspectives that provide a foundation for analysing AI's role in enhancing curriculum in basic education levels in Nigeria.

Technological Pedagogical Context Knowledge (TPACK) Framework

The TPACK framework, developed by Mishra and Koehler (2006), emphasizes the integration of technology, pedagogy and content knowledge. It proposes that teachers must possess an understanding of how to teach subject matter using appropriate technologies. In the context of AI, TPACK is vital as it ensures that educators do not use technologies in isolation but align it with pedagogical goals and curriculum standards for example, an AI driven classroom monitoring tool should be implemented not just for automation but to improve learner participation and feedback mechanisms.

Constructivist and Connectivist Learning Theories

Constructivist learning theory rooted in the works of Piaget and Vygotsky, posits that learners construct knowledge through active engagement and social interaction. In AI enhanced classrooms, constructivist pedagogy is supported by learning adaptive feedback and collaboration problem-solving. Teachers, therefore, shift from being knowledge transmitters to

learning facilitators who design meaningful context-rich activities aligned with learners needs. Complementing constructivism, connectivist learning theory. Siemens, (2005) offers contemporary lens for digital and AI integrated environments. It emphasizes learning as a process of building networks-connecting ideas, resources and people across digital platforms. AI tools such as recommendation engines, intelligent tutoring systems, and collaborative bots become part of the learners' extended cognitive environment. In this model the teachers' role includes guiding students in navigating complex digital eco-systems, resources and fostering critical digital literacies.

Substitution, Augmentation, Modification, Redefinition (SAMR) Model

The SAMR model (Puentedura, 2009) offers practical lens through which to evaluate the integration of technology into teaching. It categorizes the use of digital tools into four progressive levels:

Substitution: Technology replaces traditional tools (e.g., AI marking essays instead of the teacher).

Augmentation: Technology enhances traditional tasks (e.g., AI adds grammar suggestions during essay writing).

Modification: Technology allows significant redesign of tasks (e.g., AI tools based on real-time analytics).

Redefinition: Technology enables creation of entirely new learning experiences (e.g., creating knowledge with AI avatars or using simulation powered by AI).

In teacher education, understanding the SAMR model encourages future educators to move beyond superficial use of AI and towards transformative pedagogical practices.

Human-AI Collaboration

Human-AI collaboration envisions a synergistic relationship in which AI supports teachers rather than replaces them. In this co-teaching model, AI handles routine or data-heavy tasks (e.g., assessment analytics, classroom management), allowing teachers to focus on interpersonal, ethical, aid creative aspects of teaching. This shift calls for 21st century teaching competencies including digital literacy, adaptability, critical thinking and ethical reasoning.

Teacher education programs must therefore, embed these competencies, training teachers to critically evaluate AI tools, maintain human-centered pedagogy and uphold values like equity, transparency and inclusiveness in AI enhanced learning environments.

Activity Theory

Originating from Vygotsky sociocultural theory, activity theory posits that learning occurs through interactions between individuals, tools and the environment (Engestrom, 1987). In classroom settings AI tools act as mediators between the teacher and the learner, shaping the learning process. Activity theory provides a lens to analyse how AI influences teaching activities, roles and outcomes. It helps understand the systematic changes introduced by AI in classroom routines and teacher-learner dynamics.

Diffusion Innovations Theory

Developed by Rogers (2003), the diffusion innovations theory explains how new technologies are adopted within a social system. The theory identifies stages of adoption-knowledge, persuasion, decision, implementation and confirmation. This model is useful in analysing how AI tools are perceived, trialled and integrated within educational institutions. Factors such as perceived usefulness, complexity and institutional support affect adaption rate. In teacher education slow adoption of AI is often due to infrastructural limitations and a lack of training.

By combining these theoretical perspectives, this study provides a robust framework to evaluate the application of AI in classroom management and its effect on curriculum implementation at basic education schools. TPACK ensures pedagogical relevance, activity theory captures the dynamic interactions in classrooms and diffusion theory explains the institutional processes change.

Together, these theoretical and conceptional frameworks provide a foundation for understanding how AI is reconfiguring the classroom and what this transformation means for teacher education.

Conceptual Framework

To guide the readers, relevant terms were conceptualized.

Artificial Intelligence in Education

Artificial intelligence in education refers to the use of machines learning algorithms, natural language, processing, and predictive analytic to facilitate and authorize teaching and the learning

process (Chen et al., 2022). AI perform tasks such as monitoring, attendance, providing adaptive learning contents, tracking student behavior and offering real time feedback. In basic education, AI assists in streamlining and administrative duties and promoting interventions strategies. The scope of AI in education includes intelligence tutoring systems, automated grading, learning analytics, and AI powered visual assistant (Holmes et al, 2019).

Curriculum Implementation in Basic Education

Curriculum implementation is the process by which designed educational goals is translated into practice through teaching and learning activities (Tukur 2024). It involves delivery, the curriculum as planned, ensuring it is contextually relevant, and effectively assessed in basic education institutions in Nigeria successful curriculum implementation depends on competent, instructional delivery, learner, engagement, and institutional support.

However, challenges such as overcrowded classrooms, delayed assessments, and a lack of personalized learning, hinder optimal implementation. Therefore, integrating AI into basic education can address those bottle necks and improve curriculum outcomes. (Okoye and Nwafor, 2022).

Implications for Curriculum Implementation

The adoption of AI in classroom management has substantial implications for curriculum implementation at the basic education in Nigeria. These implications extend beyond automation and efficiency, reaching into the heart of pedagogy, inclusivity, feedback systems and sustainable learning environments.

Enhanced Curriculum Delivery

AI facilitates more structured and effective lesson planning through predictive analytics and adaptive learning technologies. Teachers can use AI generated insights to tailor content to learner's need and ensure alignment with curriculum objectives. This real-time customization ensures that core learning outcomes are met more efficiently (Luckin et al., 2016).

Automated attendance, performance tracking and grading systems reduce administrative burdens, allowing teachers more time to focus on delivery content.

Improved Learner Engagement

By integrating AI into classroom management, educators can identify at risk students early and provide targeted interventions. AI tools such as sentiment analysis, eye-tracking and engagement scores help assess student attentiveness, thus enabling proactive strategies to maintain interest participation (Chen et al., 2020). This supports the active engagement of students, a critical factor for the successful implementation of modern learner-centered circular.

Feedback and Assessment

AI tools enhance formative and supportive assessment processes. Intelligent systems can assess open-ended responses, provide immediate feedback and track individual learning paths, this fosters a culture of continuous assessment and improvement, which is essential for curriculum monitoring and evaluation (Holmes et al., 2019). The ability of AI to provide instant, personalized feedback improves learning outcomes and encourages students autonomy.

Inclusive and Differentiated Instruction

One of the core goals of modern curriculum frameworks is inclusivity. AI enables differentiated instruction by analysing students' learning styles, language proficiency and previous performance. This is especially important in diverse classrooms such as those in basic education schools where students often come from varying educational backgrounds (UNESCO, 2021). AI powered translation and text-to-speech tools also support learners with disabilities, promoting equitable access to content.

Curriculum Alignment Compliance

AI can assist educators and administrators in aligning classroom activities with national curriculum standards. Learning analytics platforms can monitor the extent to which curriculum objectives are being covered and offers reminders or suggestions for addressing gaps. This promotes accountability and ensures that curriculum delivery complies with quality assurance standards set by regulatory bodies, such as Universal Basic Education Commission (UBEC) in Nigeria (Okoye and Nwafor, 2022).

Capacity Building for Curriculum Innovation

Implementing AI successfully requires new forms of teacher training focused on digital literacy, pedagogical innovation, and ethical use of technology. As educators learn to interpret AI-driven data and adapt their strategies of curriculum reform. Professional development programs should

therefore be updated to reflect AI competencies in both pre-service and in-service training modules (Mishra & Koehler, 2006).

Institutional Change Management

For AI to be integrated into curriculum implementation successfully, institutional framework must evolve, curriculum designs teams, ICT units, and policy makers must collaborate to establish guidelines, allocate resources and provide technical support. AI Adoption should be part of broader digital transformation strategies, that aims to modernized Nigerian basic education (Ibrahim, 2025). Institutions need to develop data governance policies and infrastructure that supports ethical, scalable and context-specific AI application.

The application of AI in classroom management has direct implication for curriculum implication as it promotes efficiency, inclusivity, timely assessment and evidence-based teaching. However, these benefits can only be realized if institutions commit to systemic reforms, policy development and ongoing capacity building.

Challenges and Risks

As AI becomes more embedded in educational environments, teacher education, system, face critical challenges that must be acknowledged and addressed. These concerns span from structural inequalities and technological fatigue to risks and privacy concerns. This section outlines four key challenges that could undermine the effectiveness and inclusiveness of AI integrated classroom management.

1. Equity and Access to AI resources in Classroom Management: AI often require significant technological infrastructure, including high, speed Internet, digital device, and licensed software platforms. Many basic education schools, especially in low resource or rural settings lack these essentials. This digital divide may result in equal exposure and unpreparedness among students without deliberate interventions, AI driven reform many deepen existing educational inequities (UNESCO, 2021). Classroom management most therefore prioritize, inclusive access and context sensitive solutions such as mobile base AI tools or source platforms tailored to diverse settings.

2. Resistance to change and digital burnout: AI's entry into education often meet sceptism from educators who feel overwhelmed by Constant technological shifts. Many teachers perceive

AI tools as traits, to their autonomy or struggle with unclear pedagogical value, leading to passive resistance.

Furthermore, prolonged interaction with digital systems, especially without sufficient support or training, can cause digital fatigue without burnouts (Singh and Aiken, 2022). For teacher education to succeed in the AI era, it must embed change management strategies, provide psycho, social support, and emphasis human AI collaboration rather than replacements.

3. Privacy, Data Protection, and Algorithmic Bias: AI system used in classroom, collect large volumes of sensitive data, including academic performance, behavior, pattern, and emotional response. If not handled ethically, this data can be misused either through surveillance or data breaches. Furthermore, AI algorithms can perpetuate biases, especially when trained on representative data sets.

Teachers must therefore be equipped to recognize, critique and mitigate algorithmic bias. Teachers education programs must include robust training in data ethics GDPR compliance and ethical edtech used to guide students' rights and promotes transparency. (Porayska et al 2024)

4 Ethical Dilemmas in Automating Pedagogical Decisions: AI are increasingly used to recommend grades, assess learner engagements or personalize instruction raising serious ethical questions about autonomy and accountability. Should a machine determine a student learning path. What happened when AI recommendations conflicts with human judgments?

This automated decision risk dehumanizing education if teachers defer too much to algorithms. Teacher education must be foster critical AI literacy, where educators can question contextualize, and override AI generated outputs based on the professional experience and moral judgments (Holmes et al., 2022).

In a study conducted by Ibrahim (2025), challenges to AI integration is basic educational aware identified to include limited infrastructure, especially in terms of power supply and Internet access, inefficiency, funding for purchasing or maintaining AI tools. Low digital literacy, especially in terms of power supply conscience related to data privacy, solvent, and Algorithmic bias.

In summary, while AI offers significant opportunities, it also introduce complex risk that must be proactively, addressing education only by confronting to those challenges head on through inclusive asses, electrical training, and pedagogical clarity can ensure AI support, rather than disrupts the human contract mission of education.

Conclusion

The application of AI in classroom management holds transformative potentials for enhancing curriculum implementation in Nigeria basic education schools. This paper has examined how AI technologies ranging from automated attendance and adaptive learning to intelligent feedback mechanisms can support educators in overcoming long standing challenges related to students engagement, instructional efficiency, assessment accuracy and Inclusivity, focusing on universal basic education levels in Nigeria, the study revealed that while awareness of AI's capabilities remains limited among staff and students, there is strong interest in its potential to reshape teaching and learning. However, wide spread adoption is currently constrained by infrastructural deficits, limited digital literacy, financial barriers and ethical concerns around data use and surveillance without strategic planning and support, these challenges risk widening existing educational inequalities rather than resolving them. To move forward, basic education schools must take a multi prolonged approach that includes policy development, educator training, ethical regulation and investment in infrastructure. Additionally, the inclusion of AI competences in teacher education curricular will prepare future educators for increasingly digitized academic environment, AI should not be viewed as a replacement for teachers but rather as a powerful tool to support them in delivering learner-centred, efficient and responsive instruction by adopting a balanced and inclusive strategy as the basic education schools can harness the power of AI to meet national curriculum goals and contribute to the achievement of sustainable development goals ensuring inclusive and equitable education for all.

Recommendations

To fully leverage AI for effective classroom management and curriculum implementation at basic education levels in Nigeria, and by extension, in similar institution across Nigeria the following recommendations are proposed. These span policy, capacity building, infrastructure, ethics and pedagogical innovation.

- 1. Develop Institutional AI Policies:** Basic education commission should establish clear policy frameworks that guide the use, implementation and governance of AI tools in teaching and learning. These policies must address data privacy, consent, ethical standards, accountability and algorithms transparency; these policies should be in line with international best practices and aligned with Nigeria's evolving digital education strategy (UNESCO, 2021).
- 2. Build Digital and AI Literacy among Educators:** A comprehensive training programme is essential to equip educators with the skills required to implement and manage AI systems effectively. Training should cover AI functionalities, ethical use integration with pedagogy and interpretation of data-driven insight. Workshops, webinars and online certification courses can support both pre-service and in-service teacher development. (Mishra & Koehter, 2006; Chen et al., 2020).
- 3. Invest in Technological Infrastructure:** Government and institutional stakeholders should prioritize investment in infrastructure, including reliable internet access, electricity supply, and smart classroom tools. Collaborations with private technology firms and international development partners can help provide the financial and technical resources needed to build AI ready learning environment (Fadele, 2025).
- 4. Pilot AI Projects in Classroom Management:** Before institution-wide adoption, pilot AI projects should be implemented in selected basic education schools. These pilots should focus on automating attendance, monitoring engagement and personalizing content delivery. Outcomes should be evaluated through measurable indicators such as students' performance, engagement and satisfaction (Holmes et al., 2019).
- 5. Establish Ethical Oversight Committees:** An AI ethics oversight committee should be formed with the basic education commission to monitor and regulate AI use. The body should include ICT experts, educators, legal professionals and students representatives. Their mandate should include reviewing AI systems for fairness, bias, transparency, and data protection
- 6. Localize AI tools for Cultural and Contextual Fit:** Imported AI systems often lack sensitivity to local languages, cultural norms and pedagogical styles. Developers and stakeholders should ensure that AI tools are tailored to fit the Nigerian educational

context. For instance, in cooperating local dialects and recognizing the socio cultural diversity of learners can enhance tool effectiveness and user acceptance

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