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STAKEHOLDER PERSPECTIVES ON BLENDED LEARNING INTEGRATION IN EARLY CHILDHOOD EDUCATION: A QUALITATIVE CASE STUDY OF KATSINA STATE, NIGERIA, IN GLOBAL COMPARISON

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Abstract

While experimental studies extensively measure the statistical efficacy of blended learning on student performance, they frequently overlook the lived experiences, cultural nuances, and pedagogical challenges perceived by frontline educators and caregivers. Utilizing a qualitative multiple-case study design, this research explores stakeholder perceptions regarding the integration of blended learning strategies, specifically WhatsApp-facilitated flipped classrooms in Early Childhood Education (ECE) across Katsina State, Nigeria, while contextualizing these insights within global frameworks from developed and developing regions, as well as higher education sectors. Drawing from semi-structured interviews with 24 key participants, including 20 ECE classroom practitioners and 4 school administrators, data were analyzed using thematic analysis anchored in the Technology Acceptance Model (TAM) and Vygotsky's constructivist learning theory. The findings reveal critical contextual divergences: whereas global higher education models prioritize self-regulated digital autonomy, ECE

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implementation in resource-constrained settings relies heavily on co-regulated, adult-mediated structures. Furthermore, while infrastructural barriers remain pronounced in Sub-Saharan Africa, pedagogical affordances consistently foster high motivation, enhanced engagement, and superior knowledge retention among young learners.

Introduction

The global education landscape has experienced a profound paradigm shift toward digital integration, accelerated by post-pandemic educational reforms and national digital strategies such as Nigeria's National Digital Learning Policy (NDLP, 2023). This policy builds on earlier frameworks such as the National IT Policy, ICT in Education Policy, and the Nigerian National Broadband Plan, with objectives to bridge the digital divide, enhance resilience against disruptions, and improve global competitiveness of Nigerian graduates. These historical developments provide the foundation for current debates on how best to integrate digital innovations into teaching and learning, particularly in Early Childhood Education (ECE).

Blended learning, also known as "hybrid teaching," is defined as a method of teaching that integrates conventional face-to-face classroom experiences with online learning, providing a comprehensive educational strategy (Boelens et al., 2015; Zeqiri et al., 2021; Gidado et al., 2025). It includes various models such as the Rotation Model, Flex Model, A La Carte Model, and Enriched Virtual Model. Among all the Rotation model is also identified to be of different category offering various ways to integrate technology into education, catering to different learning styles and needs. As such, Kılınç and Okur (2023) maintained that the diverse models for facilitating blended learning vary somewhat in terms of teacher responsibilities, administrative requirements, and instructional emphasis. Therefore, schools may choose to modify how and when students move between their homes and the school for numerous types of learning approaches.

While quantitative and quasi-experimental studies establish that blended learning improves academic outcomes and retention in controlled environments, numerical data alone cannot capture the intricate realities of classroom implementation (Gidado et al., 2026). In Early Childhood Education (ECE), covering ages 0 to 6, the integration of technology presents unique developmental and operational hurdles. Young children cannot navigate online platforms independently; their cognitive and digital engagement is entirely mediated by teachers in classrooms and parents at home. Consequently, understanding how educators and caregivers perceive, experience, and negotiate blended learning strategies is critical for sustainable policy formulation.

Furthermore, a significant gap exists in comparative literature. Much of the qualitative research surrounding blended learning stems from higher education or secondary schooling in Western or Asian contexts. Exploring how these experiences compare with early childhood education in resource-constrained settings like Katsina State, Nigeria, provides a vital cross-contextual perspective.

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Purpose of the Study

This qualitative study investigates stakeholder perceptions of blended learning in ECE settings within Katsina State, Nigeria, and contextualizes these findings through a comparative analysis against global ECE and higher education paradigms. Specifically, the study examines how theoretical frameworks explain technology adoption and cognitive scaffolding in early childhood digital interventions.

Theoretical Framework and Conceptual Alignment

To understand the complex dynamics of integrating technology into early childhood education, this study grounds its analysis in two complementary theoretical frameworks: the **Technology Acceptance Model (TAM)** and **Vygotsky's Constructivist Theory of Learning**.

1. The Technology Acceptance Model (TAM)

Originally formulated by Davis (1989), TAM posits that user adoption of technology is fundamentally determined by two core psychological constructs: Perceived Usefulness (PU), the degree to which a person believes that using a particular system would enhance their job or learning performance and Perceived Ease of Use (PEOU), the degree to which a person believes that using the system would be free of effort. Therefore, in the context of ECE in Katsina State, TAM operates through a dual lens. Because preschoolers cannot evaluate technology themselves, the "users" are primarily teachers and parents. For teachers, perceived usefulness relates to whether WhatsApp-facilitated flipped videos improve pupil participation and retention. For parents, ease of use is tied to mobile data accessibility and smartphone familiarity. When stakeholders perceive the digital tool as both useful and accessible, resistance diminishes, fostering a collaborative digital ecosystem despite local infrastructural constraints.

2. Vygotsky's Constructivist Theory and the Zone of Proximal Development (ZPD)

Lev Vygotsky's (1978) social constructivism emphasizes that learning is inherently social and culturally mediated, occurring first through interpersonal interaction before becoming internalized by the child. A central pillar of Vygotsky's framework is the Zone of Proximal Development (ZPD) the distance between what a learner can do independently and what they can achieve with guidance and encouragement from a more knowledgeable other (MKO).

In traditional ECE settings across Katsina State, overcrowded classrooms and teacher-centered recitations often restrict the ZPD. However, introducing a blended learning model (such as a WhatsApp-based flipped classroom) expands the ZPD by creating a multi-tiered scaffolding system. Parents act as home-based MKOs by co-viewing instructional clips with children, while teachers provide classroom reinforcement. Thus, digital media does not replace human interaction; rather, it acts as a psychological tool that mediates cognitive development, active participation, and conceptual mastery.

Literature Review

The review of related literature is structured across four conceptual tiers to bridge the gap between global trends and localized ECE realities: (a) higher education blended learning models, (b) K-12 and early childhood technological integration, (c) Sub-Saharan African educational realities, and (d) mobile micro-learning innovations.

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Global Higher Education and Adult Learning Paradigms

Extensive scholarship in higher education (e.g., Farooqi et al., 2023; Han, 2024; LHassan & Shukri, 2017) emphasizes that adult and tertiary learners value blended learning for its schedule flexibility, autonomy, and access to robust Learning Management Systems (LMS) such as Moodle or Blackboard. Argyriou et al. (2022) note that undergraduate engagement with asynchronous video resources directly predicts examination performance. However, higher education studies frequently report challenges related to self-regulation, time-management constraints, and digital fatigue among adult learners.

K-12 and Early Childhood Pedagogical Shifts

Moving down the educational ladder, research focusing on educators' perspectives in K-12 environments (such as Hensley, 2020) reveals that teachers view blended learning as a powerful catalyst for boosting student engagement, collaboration, and differentiated instruction. In early childhood education, however, the paradigm shifts from autonomous self-regulation to co-regulated, play-based digital interactions. Scholars emphasize that technology in ECE must be developmentally appropriate, serving to spark curiosity rather than passive screen consumption (Liu et al., 2024).

Sub-Saharan African Contexts and Infrastructural Realities

In developing regions like Northern Nigeria, infrastructural challenges such as erratic power supply, limited internet connectivity, and high mobile data costs frame the qualitative experience distinctively (Adarkwah, 2021). Unlike Western or Asian institutions equipped with dedicated server rooms and campus-wide high-speed Wi-Fi, public primary schools in Katsina State operate within resource constrained environments. Consequently, formal LMS platforms are largely unviable for early childhood education.

The Rise of Mobile Micro-Learning (The WhatsApp Phenomenon)

To circumvent infrastructural bottlenecks, educators and researchers in developing economies have increasingly turned to lightweight mobile applications. Studies by Kaieski et al. (2015), Pereira et al. (2015), Martins and Gouveia (2018) and Gidado and Shehu (2026). demonstrate that WhatsApp functions as more than a simple messaging tool; it serves as a dynamic, accessible micro-learning conduit. By leveraging the ubiquity of parental smartphones, educational content can be distributed asynchronously, effectively bridging the formal classroom and the domestic environment.

Research Design

This study adopted a qualitative multiple-case study design, utilizing semi-structured in-depth interviews and reflective researcher field notes to capture rich, descriptive data regarding stakeholder perceptions, lived experiences, and pedagogical challenges.

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Participants and Sampling

Using purposeful sampling, a cohort of twenty-four ($n = 24$) key participants were selected from public ECE centers within the Dutsin-Ma Zonal Education Quality Assurance (ZEQA) district in Katsina State, Nigeria. The cohort comprised:

- Twenty (20) ECE classroom practitioners and teachers directly involved in facilitating WhatsApp-supported blended activities.
- Four (4) school administrators and headteachers overseeing early childhood educational policy execution at the local level.

Data Collection and Analysis

Data were gathered through face-to-face, semi-structured interviews guided by open-ended protocols anchored in the Technology Acceptance Model (Davis, 1989) and Vygotsky's constructivist learning theory (1978). Interviews were audio-recorded, transcribed verbatim, and subjected to thematic analysis. Transcripts were coded iteratively, grouped into overarching qualitative themes, and cross-verified to establish credibility and trustworthiness.

Findings and Thematic Discussion

The thematic analysis yielded four major qualitative themes reflecting stakeholder experiences with blended learning integration in early childhood settings:

Theme 1: Pedagogical Shift and Enhanced Learner Engagement

Participants universally noted that shifting from a purely traditional, teacher-centered recitation model to a blended flipped classroom approach revolutionized children's classroom behavior and cognitive alertness. Teachers observed that children who viewed short audiovisual stories or alphabet songs via WhatsApp at home arrived at school with heightened familiarity and intrinsic enthusiasm.

"Unlike before when children sit passively listening, the blended approach makes them talk, point at objects, and enact what they saw on their parents' phones. They are visibly more alive and curious during class time." (Teacher Participant 12)

This finding corroborates qualitative insights from Hensley (2020), Marcel (2021) and Firdausi et al., (2026), confirming that blended learning fosters active cognitive engagement and motivational drive. From a constructivist standpoint, early exposure to multimedia prepares the child's ZPD, enabling them to grasp classroom concepts faster during teacher-guided instruction.

Theme 2: The Home-School Collaborative Bridge (The WhatsApp Phenomenon)

In contrast to higher education studies where students interact with institutional portals independently, ECE stakeholders in Dutsin-Ma emphasized that blended learning in early years is fundamentally a triad involving the Teacher, Parent, and Child. Because young children cannot operate devices autonomously, WhatsApp groups served as an active communication and co-regulation bridge.

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"Parents who were previously detached from daily school activities now sit with their children at home to watch the short lesson clips sent over the weekend. It bridges the gap between home and school, making parents active co-educators." (Administrator Participant 4)

This dynamic extends the findings of Pereira et al. (2015) and Martins and Gouveia (2018), confirming that messaging platforms successfully transcend physical classroom walls to establish supportive learning communities. Grounded in TAM, parents' Perceived Usefulness increased as they witnessed their children's rapid literacy and numeracy development through shared mobile engagement.

Theme 3: Infrastructural Constraints vs. Resource Adaptability

When comparing local ECE experiences with higher education or Western contexts, a stark divergence emerged regarding technological friction. While Western studies report challenges like software navigation or digital overload, Nigerian ECE stakeholders cited fundamental infrastructural hurdles: electricity deficits, shared parental smartphones, and high mobile data costs.

"The challenge is not whether the children like the video lessons, they love them. The challenge is when a parent travels with the phone or there is a power outage preventing charging before home study time." (Teacher Participant 21)

Despite these barriers, participants demonstrated high Perceived Usefulness (Davis, 1989), adapting by encouraging shared viewing sessions, leveraging peer-to-peer device sharing, and utilizing offline-capable media storage on mobile hardware.

Theme 4: Comparative Insights: ECE vs. Higher Education & Global Contexts

Synthesizing qualitative feedback with existing literature highlights distinct structural differences across educational tiers and geographical zones:

- **Autonomy vs. Scaffolding:** In higher education (Farooqi et al., 2023; Han, 2024), blended learning promotes autonomous, self-paced adult learning. In ECE, autonomy is substituted by guided co-regulation, where digital tools act as preliminary scaffolding managed by adults.
- **Technological Sophistication:** While global universities deploy complex Learning Management Systems with advanced analytics (Argyriou et al., 2022), ECE in Katsina relies on lightweight mobile messaging, proving that low-tech adaptations can achieve high social and motivational impact when pedagogically structured.

CONCLUSION

This qualitative study provides deep insight into stakeholder perceptions regarding blended learning integration in Early Childhood Education in Katsina State, Nigeria, framing these experiences within a global comparative context. The findings reveal that while structural and infrastructural barriers differ vastly between developing ECE sectors and global higher education, the core psychological and pedagogical benefits such as enhanced engagement, active participation, and robust home-school collaboration remain universally consistent.

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Theoretically, the study validates the utility of the Technology Acceptance Model and Vygotsky's constructivism in non-Western, resource-constrained early childhood settings, demonstrating that technology acceptance in early years is mediated by adult stakeholders acting as scaffolding agents.

RECOMMENDATIONS

1. **Policy Recognition of Micro-Learning:** Educational policymakers in Nigeria should officially recognize micro-learning platforms (such as WhatsApp) as legitimate administrative and instructional conduits for ECE, providing subsidized data packages for public school teachers.
2. **Parental Orientation Programs:** Schools should incorporate brief orientation sessions for parents during Parent-Teacher Association (PTA) meetings, training them on how to effectively co-facilitate home-based digital learning without inducing screen fatigue in young children.
3. **Localized Digital Curriculum Development:** Curriculum developers should collaborate with local media and EdTech creators to produce culturally relevant, low-bandwidth audiovisual ECE resources in regional languages and bilingual formats.

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