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Effect of Blended Learning Strategy on Learning Motivation of Early Childhood Education Pupils in Katsina State, Nigeria



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Abstract

Purpose: This study examined the effect of a blended learning strategy on the learning motivation of Early Childhood Education (ECE) pupils in Katsina State, Nigeria.

Methodology: The research utilized a pre-test, post-test, non-randomized control group quasi-experimental design involving 188 ECE pupils (105 males, 83 females) selected through multi-stage sampling from public primary schools in Dutsin-Ma Zonal Education Quality Assurance (ZEQA). The experimental group ($n = 96$) received six weeks of literacy and numeracy instruction via a WhatsApp-mediated flipped classroom model, while the control group ($n = 92$) was taught using conventional face-to-face instruction. Data were collected using the Adapted Motivational Strategies for Learning Questionnaire (AMSLQ) and analyzed using paired-sample t-tests, independent-sample t-tests, and Analysis of Covariance (ANCOVA) in SPSS at an $\alpha = .05$ significance level.

Findings: Findings revealed a statistically significant increase in pupils' motivation scores within the experimental group following the intervention ($t(95) = -19.41, p < .001$). Furthermore, ANCOVA results demonstrated that after controlling for pre-test motivation scores, pupils taught using the blended learning strategy exhibited significantly higher post-test motivation scores than those taught using conventional methods ($F(1,185) = 7.490, p = .007$). Additionally, no statistically significant difference was observed in post-test motivation scores between male ($M = 2.80, SD = 0.47$) and female ($M = 2.66, SD = 0.42$) pupils in the experimental group ($t(94) = 1.52, p = .373$), indicating gender neutrality. The study concludes that blended learning is a superior and gender-inclusive pedagogical approach for boosting pupil engagement in ECE settings.

Unique Contribution to Theory, Policy and Practice: The study extends Self-Determination Theory by showing that WhatsApp-mediated flipped instruction fosters autonomy and competence among young learners in resource-limited settings. It urges policymakers to adopt low-bandwidth mobile tools in ECE curricula and offers educators a scalable, gender-neutral blended model enhancing early literacy and numeracy motivation without widening gender gaps.

Keywords: *Blended Learning, Early Childhood Education, Flipped Classroom, Learning Motivation, Gender Equity, Katsina State*

JEL Codes: 120, 121, 124, 033

INTRODUCTION

Education in Nigeria has undergone significant transformation from the colonial era to the present, shaped by policies aimed at expanding access, improving quality, and aligning with global trends. Early policies emphasized literacy and basic education, while post-independence reforms sought to indigenize curricula and promote inclusivity. More recently, the Federal Ministry of Education has recognized the importance of technology integration, culminating in the 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).

ECE, covering ages 0–6, is widely acknowledged as the most critical stage for cognitive, social, and emotional development. Nigerian policies such as the National Minimum Standard for Early Childhood Care Centers (2007), National Policy on Education (2014) and the National Policy on Integrated Early Childhood Development (2017) underscore the importance of quality early learning experiences. However, despite these frameworks, conventional teacher-centered methods remain dominant, with limited adoption of innovative pedagogies. This gap is particularly evident in Katsina State, where socio-economic challenges, inadequate infrastructure, and overcrowded classrooms hinder effective delivery of ECE. Thus, while policy history provides a roadmap, the practical implementation of modern strategies such as blended learning remains underdeveloped.

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.

The flipped classroom, also referred to as the inverted classroom and one of the types of blended learning strategies. It shares common features with the ECE curriculum, as it promotes student-centered, peer-assisted learning, collaboration among learners, critical thinking, and creativity for better academic success. Contrary to the traditional classroom, where the teacher takes center stage in imparting new knowledge to students who passively absorb it, differentiated instruction method in form of a flipped classroom focuses on providing students with learning material such

as pre-recorded lectures, videos, presentations, and other web-based material prior to the actual class (Bergmann & Sams, 2016, Gidado, et al., 2024). Likewise, it has also been recognized as one of the fastest-growing methods of teaching in the contemporary learning revolution, and some empirical research carried out by Chen, Wang, and Chen (2014) proves that the flipped model is efficacious for achieving learning goals.

Conversely, for the purpose of this study, a flipped classroom model via WhatsApp was adopted considering its common similarity with the ECE curriculum. Neri (2015) revealed that WhatsApp can be used as a multimedia tool to make classes more attractive and subsequently improve the relationship between students and teachers. Therefore, this study considered WhatsApp as a tool that can support the construction of student learning, promote motivation and support critical thinking.

Motivation is a cornerstone concept in effective learning, particularly in ECE, where children's engagement and persistence directly affect their academic success. Motivation is classified into two types: (i) intrinsic motivation and (ii) extrinsic motivation. Intrinsic motivation stems from a child's natural curiosity and the joy of learning, while extrinsic motivation is driven by rewards or external validation (Filgona et al., 2020). Moreover, various studies by numerous scholars like Peng and Fu (2021), Puspitaningrum et al. (2021), Argiriou et al. (2022), and Daniel and Villanueva (2023) identified blended learning to have a fundamental role in promoting learner's motivation, particularly for young learners who are still developing their intrinsic interest in learning. However, it is likely that blended learning is poised to make learning more accessible and engaging, thereby boosting students' motivation by leveraging interactive, personalized, and engaging educational experiences to create a dynamic learning environment that can accommodate various learning styles, which subsequently fosters learner autonomy, builds competence through immediate feedback, and promotes social connections via collaborative activities (Afjar et al., 2020; Apeh & Iyiegboniwe, 2021; Pambudi, 2022). Certainly, in Katsina State, fostering motivation among ECE pupils is essential for transforming educational experiences and enhancing academic outcomes.

This research underscores the importance of adopting blended learning strategies in Katsina State to support ECE pupils' innate psychological needs, particularly autonomy and competence. Moreover, it is noted that a well-implemented blended learning approach is likely to cultivate conditions where children: (i) Persist through challenging tasks, (ii) Engage in deeper processing of information, (iii) Seize learning opportunities, and (iv) Develop positive attitudes toward their educational experiences. These behaviors naturally can lead to improved academic performance, which further bolsters motivation by affirming the child's sense of competence. Therefore, this study highlights that motivation and academic performance exist in a reciprocal relationship, where each factor influences and reinforces the other. Nevertheless, blended learning is yet to be fully embraced in Nigeria, particularly in ECE setting in Katsina state. Perhaps, this could be as

result of unclear provision and guide on blended learning in the ECE curriculum and other related factors. It is from this point of view that the researcher sought to investigate whether blended learning approach has effect over pupils learning motivation for better academic success among the ECE pupils in Katsina State.

Self-Determination Theory (SDT), developed by Deci and Ryan (1980), explains that human motivation is influenced by both intrinsic and extrinsic factors. The theory argues that effective learning occurs when three basic psychological needs are met: autonomy, competence, and relatedness. In Early Childhood Education (ECE), SDT provides a useful framework for understanding how blended learning, which combines face-to-face teaching with digital learning experiences, can enhance pupils' motivation and academic success. Moreover, SDT suggests that when blended learning supports autonomy, competence, and relatedness, pupils become more motivated, engaged, and successful in their learning. Therefore, in the context of this study integrating SDT principles into blended learning can help educators create more inclusive, stimulating, and effective learning environments that enhance young learners' motivation for better academic success in ECE.

Statement of the Problem

Despite decades of policy interventions, ECE in Nigeria faces structural challenges. UNICEF (2022) reports indicate declining enrollment motivation in pre-primary education, with the sharpest drops observed in northern Nigeria. Furthermore, a significant proportion of enrolled pupils exhibit weak foundational learning motivation. Although initiatives by the Federal Ministry of Education, UNICEF, DFID, and GPE (2012–2022) provided infrastructure and teacher training, learner motivation remains low.

A key driver of this issue is the reliance on traditional teacher-centered instruction. Furthermore, existing national frameworks such as the National Policy on Information Technology (2017), the Nigerian National Broadband Plan (2018), and the NDLP (2023) lack explicit implementation guidelines for ECE classrooms. Additionally, prior empirical research on blended learning in Nigeria has focused predominantly on secondary and tertiary institutions, leaving early childhood settings underexplored. This study addresses this gap by investigating the impact of a blended learning strategy on pupil motivation in ECE centers in Katsina State.

Objectives

1. To ascertain if there is a significant difference between pretest and posttest mean motivation scores of pupils in the experimental group taught using the blended learning strategy.
2. To determine the effect of blended learning on pupils' motivation towards learning in early childhood education compared to those taught using the conventional method
3. To determine if there is significant difference in the post-test motivation scores between male and female pupils taught using blended learning strategy.

Hypotheses

The following null hypotheses were tested at the $\alpha = 0.05$ level of significance:

H0₁: There is no significant difference between pretest and posttest mean motivation scores of pupils in the experimental group taught using the blended learning strategy.

H0₂: There is no significant difference in motivation towards learning in early childhood education between pupils taught with blended learning and those taught using the conventional method.

H0₃: There is no significant difference in the mean post-test motivation scores between male and female pupils taught using blended learning strategy.

METHODOLOGY

Research Design

The study adopted a quasi-experimental design with pre-tests and post-tests in non-randomized groups to compare blended learning with conventional approaches. quasi-experimental design is commonly used in classroom-based studies where experimental and control groups are formed from intact classes that are naturally similar (Reichardt et al. 2023). In this study, the design was chosen to minimize internal validity threats, particularly those concerning initial group equivalence and bias, given the absence of randomization in assigning participants.

Population of the Study

The target population of the study comprised of Nineteen Thousand, One Hundred and Sixty-Eight (19,168) ECE pupils in public co-educational primary schools in Dutsin-Ma Zonal Education Quality Assurance (ZEQA), Katsina State, Nigeria, consisting of Nine Thousand Three Hundred and Eighty-two (9,382) males and Nine Thousand Seven Hundred and Eighty-six (9,786) females. The study area encompassed Three Hundred and Twenty-Three (2,33) co-educational public primary schools from across the four Local governments in Dutsin-Ma Zonal Education Quality Assurance (Dutsin-ma, Kurfi, Danmusa and Safana)

Sample Size and Sampling Procedure

A sample of 188 ECE pupils selected from two primary schools using multi-stage sampling. Firstly, the population was grouped into two strata based on the number of Local Government Areas in the Zone. Proportionate stratified sampling was then employed in selecting one co-educational school from each of the two strata. Thus, one school was selected from Dutsin-Ma and one school from Kurfi Local Government Areas, respectively. Secondly, in assigning Schools into experimental and control groups, simple random sampling technique was used using coin, School A was assigned as head while School B as the tail. The researcher tossed the coin, which ever appeared as A was assigned as experimental group and B as control group as shown in Table 1.

Table 1.**Sample Distribution by Group and Gender**

Group	Male	Female	Total
Experimental (A)	59	37	96
Control (B)	55	37	92
Total	105	83	188

Instrumentation

This study considered the following standardized instrument for data collection, in which the tool was administered for pre-test and post-test assessments:

Adapted Motivational Strategies for Learning Questionnaire (AMSLQ): This standardized tool was adapted and used to gather meaningful insights into the motivational dynamics in ECE before and after the blended learning intervention in the state. Even though it is well-regarded for its validity and reliability in measuring children's learning motivation, some adjustments were made for the purpose of this study to ensure clear and concise instructions for the respondents, thereby maximizing the response rate within an appropriate timeframe.

Validity and Reliability of the Instrument

The adapted tool (AMSLQ) was forwarded to specialists in educational psychology, ECE, measurement and evaluation for thorough editing, critique, and validation. To further assess the instrument's (AMSLQ) reliability, a pilot test was conducted with some pupils in one of the ECE settings within Katsina Metropolis, Katsina State. The collected data were analyzed for internal consistency using the Cronbach Alpha technique.

Experimental Procedure

Ethical Clearance: Formal permissions were secured from the State Universal Basic Education Board (SUBEB), school administrators, and parents/guardians.

Research Assistants: Two ECE practitioners received targeted training on administration protocols, ethics, and age-sensitive engagement strategies.

Pre-Test: The AMSLQ was administered to both groups to capture baseline motivation levels. Assistants read items aloud to assist young respondents.

Intervention: Over six weeks, the experimental group received literacy and numeracy instruction via a blended flipped-classroom model using WhatsApp (multimedia delivery of instructional

videos and materials combined with active in-person tasks). The control group received standard, face-to-face teacher-centered instruction.

Post-Test: The AMSLQ was re-administered to both groups following the six-week intervention.

Method of Data Analysis

Data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 26. The difference between the means of the pre-test and post-test for both groups was used to determine the effect. To test the hypotheses, paired sample t-test and independent sample t-test. The null hypothesis was accepted where the calculated p-value was greater than level of significance (i.e. $p\text{-value} > 0.05$ = accept null hypothesis) and rejected where the p-value was less than the level of significance (i.e. $p\text{-value} < 0.05$ = reject null hypothesis).

RESULT

H₀₁: There is no significant difference between pretest and posttest mean motivation scores of pupils in the experimental group taught using the blended learning strategy.

Table 2.

Paired t-test analysis for dependent pretest and posttest motivation scores of pupils in the experimental group taught using blended learning strategy in katsina State.

Variables	N	$\bar{X}$	SD	Df	t-value	Sig. (2-tailed)	Decision
Motivation Pretest	96	2.11	0.34	95	-19.41	.000	Rejected
Motivation Posttest	96	2.75	0.46				

As shown in Table 2, a Paired t-test analysis for dependent pretest and posttest motivation scores of pupils in the experimental group taught using blended learning strategy in Katsina State was presented. The Table revealed a mean score of 2.11 with a standard deviation of 0.34 for pupils' motivation pretest, and a mean score of 2.75 with a standard deviation of 0.44 for pupils' motivation posttest. The Table further revealed a significant value of .000 with p-value less than 0.05. This indicates that, there is significant difference between pretest and posttest scores on the effect of blended learning on student' motivation in Katsina State. The hypothesis was therefore rejected.

H0₂: There is no significant difference in motivation towards learning in early childhood education between pupils taught with blended learning and those taught using the conventional method.

Table 3. ANCOVA Analysis of the Effect of Blended Learning Strategy on motivation scores between pupils taught using blended learning and those with conventional learning in ECE in Katsina State (Controlling for Pretest Scores).

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	21.337 ^a	2	10.669	93.516	.000
Intercept	1.638	1	1.638	14.359	.000
Motivation_ Pretest	19.989	1	19.989	175.212	.000
Group	.854	1	.854	7.490	.007
Error	21.106	185	.114		
Total	1378.088	188			
Corrected Total	42.443	187			

As shown in Table 3, an ANCOVA analysis on the effect of blended learning strategy on motivation scores of pupils taught using blended learning and those with conventional learning in ECE in Katsina State was presented. The Table revealed a motivation-pretest mean square of 19.989 with $F = 175.212$ with a table value .000 which is less than ($p < 0.05$). After controlling for group effect. The Table also revealed main group effect with a mean Square of .854 with an F-statistic of 7.490 and a significant value of .007 with p-value less than 0.05. This indicates that, participants in the blended learning class demonstrated significantly higher post-test motivation than those in the traditional learning class.

H0₃: There is no significant difference in the mean post-test motivation scores between male and female pupils taught using blended learning strategy.

Table 3.

Independent samples t-test of post-test motivation scores of pupils taught using blended learning strategy by gender.

Gender	N	X	SD	Df	t-value	Sig.(2-tailed)	Decision
Male	59	2.80	0.47	94	1.52	.373	Accepted
Female	37	2.66	0.42				

As shown in Table 3, an independent samples t-test to determine the difference in the mean post-test motivation scores of pupils taught using blended learning strategy by gender was presented. The Table revealed a mean score of 2.80 with a standard deviation of 0.47 for male pupils, and mean score of 2.66 with a standard deviation of 0.42 for the female pupils. The Table further revealed a significant value of .373 with p-value greater than 0.05. This indicates that, there is no significant difference in the mean motivation scores of pupils taught using blended learning approach based on gender in Katsina State. Therefore, the null hypothesis was retained.

Discussion of Findings

The study established that pupils in the experimental group taught with blended learning showed a significant improvement in motivation between pretest and posttest. However, this finding resonates with the quasi-experimental study conducted in Turkey by Saritepeci and Çakır (2015) which proved that blended learning strategy produced a meaningful increase in average motivation compared to traditional face-to-face instruction. Similarly, Oweis (2018) found that university students exposed to blended learning demonstrated higher motivation compared to those taught using conventional method. Therefore, in line with the reviewed literatures in this study, the present study reaffirmed that blended learning fosters motivation across educational levels, extending this evidence to early childhood education where motivation is foundational for learning. Theoretically, these outcomes can be explained by Self-Determination Theory (Deci and Ryan, 1985), which emphasizes autonomy, competence, and relatedness as drivers of motivation, as blended learning provides autonomy through flexible digital tasks, competence through interactive reinforcement, and relatedness through teacher support.

Futhremore, findings from this study revealed that there is no significant difference found in posttest motivation scores between male and female pupils in the experimental group. This finding is in consistent with the meta-analytic study by Yu (2022), which revealed that gender differences in motivation are generally negligible within e-learning and blended learning environments. Furthermore, similar studies by Oweis (2018) and Simanjuntak et al. (2020) found that there is no gender-based differences in motivation among university learners. As such, findings from this study supports the available literatures reviewed in this study, which shows that blended learning is gender-neutral in its motivational impact across all level of learning, ensuring equitable benefits for both genders. Additionally, this finding can be explained by the Technology Acceptance Model, which posits that perceived usefulness and ease of use are not gender dependent as both male and female pupils benefit equally from the accessibility of blended learning tools.

Recommendations

The following recommendations were made

1. Schools should adopt blended learning strategies to boost pupils' motivation levels, as the study confirmed that blended learning significantly enhances engagement compared to traditional methods.
2. Since both male and female pupils benefited equally, blended learning should be promoted as a gender-inclusive approach, ensuring equal access and participation for all learners.
3. Education stakeholders should integrate blended learning into early childhood classrooms to strengthen pupils' learning motivation for better academic success.

Conclusion

Based on the empirical findings, this study concludes that a WhatsApp-mediated blended learning strategy significantly enhances pupils' learning motivation in ECE compared to traditional face-to-face instruction. Controlling for baseline motivation levels via ANCOVA confirmed that the interactive, multi-sensory features of the flipped classroom model directly account for these gains rather than initial group differences. Furthermore, the motivational benefits of differentiated instruction method (blended learning) are equitable across gender lines, proving that digital learning tools can bridge educational engagement gaps without favoring male or female learners over one another. Ultimately, adopting blended learning represents a viable, scalable, and inclusive pedagogical reform capable of improving foundational learning outcomes in Katsina State and similar developing contexts.

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