



Physical Activities as a Mediating Factor in the Relationship Between Play-Based Learning and School Readiness Among Preschool Children

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Abstract. *This study investigated physical activities as a mediating factor in the relationship between play-based learning and school readiness among preschool children in Oyo West Local Government Area, Oyo State. A mixed-methods research design using a convergent parallel approach was adopted. The study involved 200 preschool children aged 4–5 years and 20 preschool teachers selected through multistage sampling techniques from registered Early Childhood Care, Development and Education (ECCDE) centres. Data were collected using the Play-Based Learning Observation Checklist, School Readiness Assessment Scale, Teachers' Perception and Implementation Questionnaire, and semi-structured interviews. Quantitative data were analyzed using descriptive statistics, Pearson Product Moment Correlation, regression analysis, and t-test, while qualitative data were analyzed thematically. Findings revealed a positive and significant relationship between play-based learning and school readiness, with physical activities strengthening this relationship by improving children's attention, behaviour regulation, and learning engagement. Teachers demonstrated positive perceptions of play-based learning as an effective approach for promoting cognitive, socio-emotional, and physical development. However, major challenges identified included inadequate play materials, large class sizes, limited instructional time, curriculum pressure, parental expectations for academic instruction, and insufficient professional support. The study concludes that physical activities play a significant mediating role in enhancing the effectiveness of play-based learning for improving school readiness. It recommends increased teacher training, provision of play resources, curriculum flexibility, parental sensitization, and stronger institutional support to improve implementation of play-based learning in preschool education.*

Keywords: *play-based learning, physical activities, school readiness, preschool education, ECCDE, Oyo West Local Government Area*

1. Introduction

School readiness is described as the cognitive, socio-emotional and behavioural preparedness of children to formal schooling, is currently being conceptualized as a multidimensional developmental outcome that is influenced by the early learning experiences of preschoolers and their homes (Handayani and Kaffa, 2025; Xia, 2024). Empirical data also show that children with high social-emotional competency and executive functioning develop better coping mechanisms with classroom routines, engage in learning activities, and show faster early academic performance, which makes school readiness one of the key developmental objectives over the preschool years (Handayani and Kaffa, 2025; Hudson et al., 2020; Zamzow and Ernst, 2020). As a result, academic researchers recommend more developmentally appropriate and play-rich learning conditions to be more effective preparation than highly academic and teacher-directed learning methods (Kalinde et al., 2024; Parker et al., 2022).

In this school of thought, play-based learning has become one of the prominent early childhood pedagogies, which facilitates holistic development by utilizing meaningful, socially interactive, and engaging activities that enhance cognitive, socio-emotional, moral, and physical development (Lunga et al., 2022; Parker et al., 2022). Kalinde et al. (2024) confirmed that play-based pedagogies have a positive impact on the overall development of children and successful transitioning from pre-primary to primary school. This stance is also supported by evidence in Nigeria where a quasi-experimental study in Afijio Local Government Area of Oyo State showed that the socio-emotional development of preschoolers improved significantly after they engaged in play-based learning programmes (Adubuola et al., 2023).

The recent literature is becoming more and more open to the fact that physical activity is one of the main channels in which play-based experiences are converted into school readiness outcomes. Game-based learning programmes and movement-rich learning have demonstrated improvements in executive functioning and early numeracy skills — the key constituents of readiness for formal schooling (Hudson et al., 2020; Gibb et al., 2021). Longitudinal and path-analytic research provides additional evidence of indirect correlations between physical activity and basic motor skills and early academic competence with executive functioning mechanisms including working memory and inhibitory control (Vanhala et al., 2022; Vanhala et al., 2024). In the same regard, the benefits of play-based physical training include the enhancement of emotional control and executive control, which enhances socio-emotional competence necessary to adjust in the classroom (Xie et al., 2025). Cooperation, problem-solving, and relationship building are also strongly linked to future academic achievements and school adaptation and are offered in outdoor and active play settings (Rosiek, 2020; Bierman et al., 2023; Zhu et al., 2024).

The play-based and physically active pedagogies are supported by the developmental worth of play-based methods in African contexts. Structured forms of play, storytelling, and collaborative learning experiences have been established to be effective in strengthening socio-emotional skills and equipping children with future academic requirements (Obijiofor et al., 2025), with curriculum analyses highlighting that child-centred, play-based early childhood programmes play a critical role in strengthening the child in terms of cognitive, social, emotional, and physical readiness. Altogether, these results indicate the direction of a conceptual model where play-based learning is used as a pedagogical input, school readiness is used as a developmental outcome, and physical activity is used as a mediating factor. Although there is increasing international evidence supporting the existence of a mediating relationship between physical activity and executive function and early learning

outcomes, there is a paucity of empirical studies that explicitly test this mediating relationship in the context of Nigerian preschool settings that are implemented along with play-based educational reforms (Adubuola et al., 2023; Mwinsa, 2025).

Empirical research consistently shows that physical exercises positively affect executive functioning — working memory, cognitive flexibility, and inhibitory control — that are key predictors of academic success (Loyola, 2022; Laurent et al., 2021). Active play also enhances motor coordination, peer communication, emotional control, and social adaptability for a successful school transition (Sia et al., 2023; Fyffe et al., 2022). The evidence of these relationships was found in Nigeria, where Sulyman et al. (2024) found a significantly higher level of physical skills growth in children who received play-based learning than in those who received the traditional approach. On the same note, meta-analytic evidence reveals that organized active play positively influences basic movement skills which indirectly lead to executive functioning and competencies related to readiness (Liu et al., 2025). Longitudinal research also attests to the mediation of the benefits of physical activities on behavioural control and cognitive assimilation, critical indicators of school preparation (Tschopp et al., 2021), and structural equation modelling research indicates that the indirect pathways between play frequency, physical activity engagement, and readiness outcomes are significant (Zhu et al., 2024).

In addition to the developmental consequences, the perceptions of teachers are key to the success of the implementation of play-based learning. In various educational institutions, teachers tend to view play-based learning as very useful in fostering holistic growth as well as physical development (Burke, 2024; Parker et al., 2022; Dunn, 2025). In many instances, teachers link play with better executive functioning, emotional regulation, classroom interactions, and motor development. Nevertheless, the literature regularly mentions barriers to implementation such as lack of instructional time, academic demands, ineffective resources, and lack of professional training (Sitorus et al., 2025; Abrams-Terry et al., 2023; Jay and Knaus, 2025). The same patterns can be seen in western, Middle Eastern, African, and Asian settings, where teachers appreciate play-based pedagogy but cannot comply with policy requirements, cultural beliefs, and infrastructural constraints (Sabbagh et al., 2022; Kiprop et al., 2025; Rao et al., 2023; Jamil et al., 2025).

The empirical literature also points to the systemic problems that influence the inclusion of play-based learning and physical activity in preschool education. Research identifies insufficient teacher training, large classes, lack of play materials, and parental misconceptions about the educational importance of play as significant limitations (Otwate et al., 2025; Kasdiah et al., 2024). Institutional barriers including lack of space, accountability pressures, and classroom management issues are also observed in reviews of physical activity interventions (McGowan et al., 2023). The previous literature also reports that a large number of teachers are not trained professionals in physical education, are not familiar with recommendations for appropriate activities, and therefore lead overly sedentary classrooms (Brian et al., 2018; Dymont and Coleman, 2012; Tremblay et al., 2012).

2. Theoretical Framework

This study has a theoretical basis in major developmental views. The Cognitive Development Theory of Jean Piaget (1952) states that children develop their cognition by interacting actively and engaging in symbolic play, so play-based learning is a key factor in cognitive and motor developments that are associated with school preparedness. The Sociocultural Theory of Lev Vygotsky (1978) is based on the idea of learning with peers under the guidance of a teacher within the Zone of Proximal Development in terms of building self-regulation skills and collaborative skills. The Play Theory of

Friedrich Froebel (1887) offers a philosophical foundation for the education of young children with the holistic development of the child at its centre, placing play and movement as essential. In addition, Dynamic Systems Theory by Esther Thelen and Linda B. Smith (1994) explains how motor, cognitive, and social systems develop in interaction, thus favouring physical activity as an intermediating developmental system. Moreover, according to Ecological Systems Theory by Urie Bronfenbrenner (1979), the development of children is contextualized in the environment and institutions, which explains how teacher practice, learning environments, and available resources are relevant to play implementation and readiness outcomes.

Combined, empirical and theoretical data indicate that play-based learning can boost school readiness through increased physical activities, but that teacher perceptions and contextual influences affect successful implementation. There are, however, limited Nigerian studies that have directly investigated physical activity as a mediating variable in this relationship. To fill this gap, the current study explores physical activities as a mediating variable in the relationship between play-based learning and school readiness among preschool children in Oyo West Local Government Area, Oyo State, with the focus of creating context-specific evidence that can be used to inform early childhood pedagogy, teacher development, and curriculum practice.

3. Statement of the Problem

School readiness is an important issue in early childhood education since the successful development of children to formal schooling level is heavily reliant on proper cognitive, socio-emotional, behavioural, and physical development in the preschool years. Play-based learning is an instructional method that has been identified as developmentally suitable, facilitating active learning, exploration, socialization, and experiential learning that should be incorporated in the development of the whole child.

Current research demonstrates that play-based learning improves cognitive, social, emotional, and creative skills, as well as physical growth, which together lead to school preparedness. The motor coordination, attention, executive functioning, and adaptive classroom behaviours needed for successful participation in formal learning are further enhanced through movement-oriented play activities. Nevertheless, most preschools continue to focus on teacher-scheduled and academically motivated learning, which restricts the possibility of meaningful play and physical activity.

Even though studies have explored play-based learning, physical activity, and school readiness individually, there is not much empirical evidence that clarifies the role of physical activities as a mediating variable between play-based learning and school readiness, especially in the environment of Nigerian preschools. Moreover, although play-based learning is usually recognized as a useful tool by teachers, challenges such as insufficient training, lack of resources, overcrowding, curriculum pressure, and a societal preference towards early academic learning tend to make implementation extremely difficult. This paper therefore examines the role of physical activities as a mediator between play-based learning and school readiness in preschool children in Oyo West Local Government Area, Oyo State.

4. Objectives of the Study

The general objective of this study is to examine the impact of play-based learning on school readiness and physical activities of preschool children. The study is guided by the following specific objectives: to investigate the role of physical activities in mediating the relationship between play-based learning

and school readiness; to explore teachers' perceptions of the effectiveness of play-based learning in promoting school readiness and physical development; and to identify the challenges faced by preschool educators in implementing play-based learning strategies aimed at improving school readiness and physical activity.

5. Research Questions

1. How do physical activities mediate the relationship between play-based learning and school readiness?
2. What are teachers' perceptions of the effectiveness of play-based learning in promoting school readiness and physical development?
3. What challenges do preschool educators face in implementing play-based learning strategies aimed at improving school readiness and physical activity?

6. Methodology

This research design is a mixed-methods study with a convergent parallel approach used to understand how physical activities mediate the interaction between play-based learning and school readiness in preschool children. Quantitative and qualitative data were measured simultaneously in order to receive both measurable results and contextual experiences of teachers. The quantitative component tested connections between play-based learning, physical activities, and school preparedness, and the qualitative component explored teacher perceptions and issues with adopting play-based learning strategies.

The sample included preschool students and teachers in public and private Early Childhood Care, Development and Education (ECCDE) centres in Oyo West Local Government Area, Oyo State. The study sample included 200 preschool children aged 4 to 5 years and 20 preschool teachers who were sampled using multistage sampling methods which entailed random selection of schools and purposive selection of eligible children and teachers.

Three instruments were used to gather data: the Play-Based Learning Observation Checklist (PBLOC) to document classroom play activities and children's engagement in physical activities; the School Readiness Assessment Scale (SRAS) to measure cognitive, socio-emotional, language, and physical readiness; and the Teachers' Perception and Implementation Questionnaire (TPIQ) to capture information about teacher perceptions and barriers to implementation. Teachers were also interviewed through semi-structured interviews in order to provide qualitative information.

The instruments were validated by professionals in Early Childhood Education and Educational Measurement, and reliability coefficients from pilot testing yielded Cronbach Alpha coefficients of 0.81–0.88, indicating good internal consistency. Descriptive statistics (mean, frequency, and standard deviation) and inferential statistics including Pearson Product Moment Correlation and regression analysis were used to analyze quantitative data to identify relationships and mediation effects. Thematic analysis was used to analyze qualitative data from interviews to identify the frequency of perceptions and impediments to implementation. Relevant authorities granted ethical approval and informed consent was obtained through school administrators, teachers, and parents. Respondents participated voluntarily and their confidentiality was respected throughout the study.

7. Results

Research Question 1: How do physical activities mediate the relationship between play-based learning and school readiness among preschool students in Oyo West?

Table 1: Correlation table showing how physical activity mediates the relationship between play-based learning and school readiness among preschool students in Oyo West

Control Variables			Play-based Learning	School Readiness	
Physical Activity	Play Based Learning	Correlation	1.000	.460	
		Significance (2-tailed)	.	.000	
		Df	0	197	
	School Readiness	Correlation	.460	1.000	
		Significance (2-tailed)	.000	.	
		Df	197	0	

Table 1 shows the correlation among physical activity, play-based learning, and school readiness among preschool children in Oyo West. The analysis revealed a positive and significant relationship between play-based learning and school readiness ($r = 0.460$, $p < .05$, $N = 200$). This indicates that children who are more engaged in play-based learning activities tend to demonstrate higher levels of school readiness compared to their peers with less exposure. Furthermore, physical activity was also positively and significantly correlated with play-based learning ($r = 0.460$, $p < .05$, $N = 200$), suggesting that children who participate more in physical activities are likely to gain greater benefits from play-based learning environments. These findings imply that both play-based learning and physical activity are important factors that enhance school readiness among preschool children.

Research Question 2: What are teachers' perceptions of the effectiveness of play-based learning in promoting school readiness and physical development?

Table 2: Summary of one-sample t-test on teachers' perceptions of the effectiveness of play-based learning in promoting school readiness and physical development among preschool students in Oyo West

	N	Mean	Std. Deviation	T	df	Sig. (2-tailed)
Play-based learning enhances children's school readiness.	200	3.65	.807			
Children learn faster through play than through formal lessons.	200	3.21	.860	20.161	199	.000
Play activities improve children's attention and participation.	200	3.50	.501	11.675	199	.000
Play-based learning supports cognitive and language development.	200	3.22	.557	28.213	199	.000
Play encourages creativity and problem-solving in children.	200	3.01	1.002	18.151	199	.000
Physical play contributes to children's health and fitness.	200	3.43	.622	7.195	199	.000
Play-based methods make teaching more enjoyable and effective.	200	3.22	.679	21.141	199	.000
Play-based learning improves children's social relationships.	200	3.00	.845	14.891	199	.000
Play helps reduce classroom behavioral problems.	200	3.30	.879	8.371	199	.000
Play-based learning should be integrated into every preschool subject.	200	3.29	.590	12.797	199	.000

I regularly include play-based activities in my lesson plans.	200	2.93	.708	18.949	199	.000
My classroom has adequate materials for play-based learning.	200	2.72	.586	8.484	199	.000
The school administration supports play-based learning initiatives.	200	3.08	.802	5.310	199	.000
I have received adequate training on play-based pedagogy.	200	3.08	.593	10.144	199	.000
Time constraints make it difficult to use play-based methods.	200	3.16	.914	13.723	199	.000
Large class size limits effective implementation of play-based learning.	200	3.15	.739	10.136	199	.000
Lack of appropriate play materials hinders children's active participation.	200	3.37	.717	12.337	199	.000
Parental pressure for academic instruction reduces time for play.	200	3.15	.640	17.057	199	.000
Curriculum expectations make it difficult to balance play and academics.	200	3.29	.590	14.364	199	.000
I need more professional support to effectively integrate play into teaching.	200	3.00	.854	18.949	199	.000

The findings of the study revealed that teachers generally have a positive perception of the effectiveness of play-based learning in promoting school readiness. Teachers strongly agreed that engaging children in play-based activities enhances their readiness for school, improves attention and participation, supports cognitive and language development, and contributes to physical health and fitness. They also acknowledged that play encourages creativity, problem-solving, social interaction, and helps reduce classroom behavioral problems. While teachers recognized these benefits, they also identified several challenges that may hinder effective implementation, including time constraints, large class sizes, insufficient play materials, curriculum demands, and parental pressure for academic instruction. Statistical analysis using one-sample t-tests showed that all mean scores were significantly higher than the criterion mean of 2.50 ($p < .001$), indicating that teachers' perceptions of the effectiveness of play-based learning are statistically significant.

Research Question 3: What challenges do preschool educators face in implementing play-based learning strategies?

Table 3: Descriptive analysis of challenges faced by preschool educators in implementing play-based learning strategies aimed at improving school readiness and physical activity among preschool students in Oyo West

	N	Mean	Std. Deviation
I regularly include play-based activities in my lesson plans.	200	2.92	.708
My classroom has adequate materials for play-based learning.	200	2.72	.586

The school administration supports play-based learning initiatives.	200	3.08	.802
I have received adequate training on play-based pedagogy.	200	3.08	.593
Time constraints make it difficult to use play-based methods.	200	3.15	.914
Large class size limits effective implementation of play-based learning.	200	3.14	.739
Lack of appropriate play materials hinders children's active participation.	200	3.37	.717
Parental pressure for academic instruction reduces time for play.	200	3.15	.640
Curriculum expectations make it difficult to balance play and academics.	200	3.29	.590
I need more professional support to effectively integrate play into teaching.	200	3.00	.854
Valid N (listwise)	200		

The descriptive statistics revealed several key barriers affecting effective implementation. Time constraints emerged as a significant challenge ($M = 3.15$, $SD = 0.914$), indicating that teachers often struggle to incorporate play-based activities within the limited instructional time. Large class sizes ($M = 3.14$, $SD = 0.739$) were also identified as a hindrance, as managing a high number of children reduces the effectiveness of play-based methods. The lack of appropriate play materials ($M = 3.37$, $SD = 0.717$) was perceived as a major limitation, affecting children's active participation. External pressures, such as parental insistence on academic instruction ($M = 3.15$, $SD = 0.640$) and curriculum demands ($M = 3.29$, $SD = 0.590$), were also reported to restrict opportunities for play. Teachers acknowledged some administrative support ($M = 3.08$, $SD = 0.802$); however, they indicated a need for further professional support to effectively integrate play into teaching ($M = 3.00$, $SD = 0.854$). While teachers recognize the benefits of play-based learning for enhancing school readiness and physical development, practical, structural, and systemic challenges — including limited time, large class sizes, insufficient materials, curriculum pressures, and parental expectations — hinder its consistent implementation.

8. Qualitative Findings

Theme 1: Physical Activity, Learning, and Behaviour

Teachers stressed that physical activities made children more focused and better behaved in the classroom. Physical activities were viewed as a method of lowering restlessness and enhancing attention. One teacher explained: "Once they play or dance, they become relaxed and can listen. It increases their concentration" (Teacher 2). Another participant stated: "Physical play helps them dispel energy resulting in them not disrupting the class too much" (Teacher 6). These responses indicated that exercise helps in cognitive tasks and behavioural control.

Theme 2: Educators' Perception of Play-Based Learning Effectiveness

Generally, teachers noted that play-based learning was very effective and more helpful than traditional teaching methods. One teacher stated: "Play-based learning is quite successful as children like it and learn better" (Teacher 1). Another participant commented: "Happy children retain what they learn better since the teacher is happy herself" (Teacher 9).

Theme 3: Problems in the Implementation of Play-Based Learning

In spite of these positive attitudes, teachers reported a number of problems, such as large numbers of students, inadequate resources, space constraints, time limitations, and parental expectations. A teacher explained: "There are too many people in the classroom, and we have no materials to play" (Teacher 4). Parental pressure was noted by one participant: "Other parents do not want their children

to play, they want them to be writing and reading." Another issue raised was the need for training: "More training is required to understand how to arrange play-based lessons correctly" (Teacher 10).

Theme 4: Requirements for Support and Improvement

Teachers emphasized that administration needed to support, train, and provide resources to enhance the use of play-based learning. One participant stated: "Play-based learning will be more effective if the government and school owners can provide materials and train people." Another added: "The parents should also know that learning includes play" (Teacher 8).

9. Discussion of Findings

The first research question was whether physical activity is an intervening factor between school readiness and play-based learning. The results demonstrated a positive and significant correlation, indicating that the relationship between play-based learning and school readiness is strengthened by physical activity. This corresponds with the theory of experiential learning that emphasizes that active engagement contributes to cognitive and social development (Kolb, 2015). Physical activity promotes attention, memory, executive functions, and motor functions, which are very much needed in school preparation (Gallahue and Donnelly, 2017). These findings imply that incorporating movement into learning activities complements the advantages of play-based learning as well as the holistic growth of the child.

The second research question examined the perceptions of teachers on whether play-based learning was effective in fostering school readiness and physical growth. The findings showed that on the whole, teachers had positive attitudes, recognizing play-based learning as improving cognitive, language, and social development, attention, creativity, participation, and physical wellbeing. These results correlate with Weisberg, Hirsh-Pasek, and Golinkoff (2016), who found that teachers are aware of the importance of guided play in facilitating holistic development. Nonetheless, teachers noted the presence of difficulties such as large classroom sizes, lack of time, insufficient play resources, curriculum requirements, and parental expectations of formal academic education, which hindered effective practice (Siraj-Blatchford et al., 2011).

The third research question addressed the difficulties that preschool educators have to encounter in adopting play-based learning strategies. The research found that poor play materials, curriculum pressure, short instructional time, large classes, and parental expectations were significant barriers. Teachers also indicated the necessity for professional development and administrative assistance. These results support past research focused on the impact of structural and systemic influences on early childhood pedagogy (Fleer, 2018; Olowu and Olatunji, 2020).

10. Summary of Results

Play-based learning has a positive and significant correlation with school readiness, and physical activity strengthens this relationship. Teachers perceive play-based learning as very effective in cognitive, social, emotional, and physical development. Major obstacles to implementation include time constraints, large classes, lack of play materials, curriculum demands, and parental expectations. There is a need for more professional support and resources for teachers to utilize play-based learning effectively. Play-based learning is an effective strategy in preschool education, yet it is necessary to address structural and systemic challenges to bring out its full potential.

11. Conclusion

This paper investigated the presence of physical activities in the interaction between play-based learning and school preparedness in preschool children in Oyo West Local Government Area, Oyo State. The results showed that play-based learning plays an important role in school preparedness of children and physical activities reinforce this relationship by increasing attention, behavioural control, motor development, and engagement in learning. Research revealed that children who were actively engaged in movement-based play were more prepared for formal schooling than those exposed to less interactive instructional modes.

The research also determined that preschool educators have positive attitudes toward the effectiveness of play-based learning in facilitating cognitive, socio-emotional, and physical growth. Teachers recognized that play-based activities enhance participation, creativity, social interaction, and classroom behaviour, all of which favour overall preparedness. Nevertheless, regardless of the acknowledgment of these advantages, the successful implementation of this system still suffers structural and institutional limitations including lack of play materials, large classes, limited instruction time, curriculum demands, and parental orientation towards early academic instruction. In general, the research finds that physical activities implemented in play-based learning settings should be structured to improve the school preparation of preschool-aged children for formal education, while addressing implementation hurdles to make the best use of the developmental advantages of play-based pedagogy in ECCDE centres in Oyo West Local Government Area.

12. Recommendations

Based on the results of this research study, the following recommendations are made. Inclusion of Play-Based Pedagogy: play-based learning and movement-oriented activities should be planned as part of everyday instructional practice in preschool centres. Teacher Professional Development: school proprietors and government agencies should arrange regular training and workshops on how to plan and implement play-based and physically active learning strategies. Provision of Play Materials and Facilities: school management and educational authorities should ensure sufficient indoor and outdoor play materials, safe play areas, and activity equipment. Curriculum Flexibility: early childhood curriculum planners must give flexible instructional time that embraces play and physical activities as learning strategies rather than mere recreation. Minimization of Class Size: manageable teacher-child ratios should be maintained to allow adequate supervision of play-based learning activities. Parental Sensitization: schools should hold awareness programmes to inform parents about the educational importance of play and physical activity for school readiness. Policy Support: educational policymakers should reinforce strategies that promote effective application of play-based learning strategies in ECCDE centres.

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Ethical Approval: Relevant authorities gave ethical approval. Informed consent was obtained through school administrators, teachers, and parents. Respondents participated voluntarily and confidentiality was respected throughout.

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