

THE EFFECTIVENES OF PLAY-BASED LEARNING ON EMOTIONAL AND COGNITIVE DEVELOPMENT OF KINDERGARTEN LEARNERS

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ABSTRACT

Play-based learning was a proven approach that supported children's cognitive, emotional, and social development more effectively than traditional instruction. Backed by global research and educational theories, it fostered focus, creativity, and lifelong learning. However, in the Philippines, limited early childhood education exposure and implementation challenges hindered its full potential. This study explored the impact of play-based learning on kindergarten learners' academic performance and emotional growth, addressed barriers, and offered insights for more effective and engaging early education practices. The study concluded that play-based learning significantly improved the socio-emotional development of kindergarten learners, as shown by a notable increase in their emotional expression, cooperation, and confidence after the intervention. However, no significant differences were observed in their language and literacy skills, as well as in numeracy and problem-solving abilities before and after the implementation of play-based learning. These findings suggested that while play-based strategies were highly effective in enhancing socio-emotional growth, their influence on academic domains might have required more targeted and sustained instructional support.

Keywords: *play-based learning, language and literacy skills, numeracy and problem-solving abilities, socio-emotional domain*

INTRODUCTION

Imagine a classroom where children eagerly explore, create and collaborate—all through play. Play is more than just a pastime; it is a natural means for children to learn. Current ideas of education highlight the significance of play-based learning (PBL) as a strategy for fostering a child's social, emotional, and cognitive development (Ghosh, 2024). According to research, kids who participated in play-based learning activities were able to focus for longer periods of time and had improved memory recall (Hathaway, 2025). Additionally, Boryga (2022) highlights that play-based learning surpasses direct instruction in improving mathematical and spatial skills for early learners. The results of Ghosh (2024) suggest that cultivating an educational setting that integrates play as a fundamental learning strategy is significant. Moreover, it not only equips children for academic achievement but also supports their emotional and social well-being. Given its impact on both academic success and holistic development, cultivating an educational environment that prioritizes play is essential. This study explores the significance of integrating play as a fundamental learning strategy to support children's intellectual and emotional growth in an ever-evolving world.

Play-based learning has been widely recognized for its role in fostering critical thinking and problem-solving skills. Vygotsky (1978) emphasized that play serves as a primary means for children to develop higher-order cognitive functions, including reasoning, memory, and language acquisition. Through social interactions in play, children learn to communicate effectively, collaborate with peers, and build essential interpersonal skills that are vital for future academic success. Moreover, Piaget (1962) further asserted that children learn best through hands-on experiences, where they can manipulate objects, test ideas, and construct knowledge in a meaningful way. This interactive approach to learning encourages curiosity and creativity, allowing children to develop independence and a strong foundation for lifelong learning. Unlike traditional rote memorization, play-based learning provides opportunities for children to engage in active discovery, fostering a deeper and more enduring understanding of concepts. Maria Montessori theory of play believed that instructors need to create adequate time for children to play (Cheruiyot, 2024).

In today's fast-paced digital era, young learners are increasingly drawn to technology and mobile games, often at the expense of traditional learning experiences. According to Pew Research Center (2020), most young children engage with television, and 80% of parents report that their 5- to 11-year-olds use tablets. Additionally, 59% of parents with children aged 5-8 say their child interacts with a smartphone, while over half use computers or gaming devices. More than one-third of parents' report that their child started using a smartphone before age 5. With gadgets becoming a staple in children's daily lives, schools now compete not only with other educational institutions but also with the captivating world of online entertainment. This shift has made it imperative for educators to implement

strategies that foster a genuine love for learning, ensuring that children remain engaged and enthusiastic about their education. Globally, the integration of play-based learning transforms classrooms into engaging, interactive environments where learning feels less like a chore and more like an adventure.

Research highlights the global importance of play-based learning in early childhood education. In the United States, children aged 2 to 8 spend an average of 2.5 to 3 hours daily on screens, reducing opportunities for physical and interactive play. Studies suggest that implementing Playful Learning, a structured and evidence-based approach, can enhance both academic and social-emotional development (Roberts & Fletcher, 2024). In Nigeria, research examined teachers' perceptions of play in preschool settings. Educators used structured activities like singing and group play to maintain children's focus and engagement. While they recognized play as essential for learning, they emphasized the need for guided play with clear educational objectives rather than unstructured activities. Similarly, in Mexico, preschool teachers integrated play into structured lessons to develop cognitive, social, and physical skills. Although both urban and rural teachers valued purposeful play, free play was mostly limited to break times. In Kenya, cultural perceptions influenced play-based learning. While teachers acknowledged its benefits, parents often saw play as separate from academics, associating it with laziness. A rigid curriculum further restricted play-based methods, as teachers prioritized meeting lesson objectives over fostering student-driven learning (Le Courtois, 2024). In the Philippine context, play-based learning has been acknowledged by the Department of Education (DepEd) as an essential component of early childhood education. The Kindergarten Curriculum Framework (DepEd, 2012) includes play as a fundamental learning approach, emphasizing its role in developing children's cognitive, social, and emotional skills. (Bautista et al., 2019). By 2019, 77.6% of children lacked ECE exposure. Moreover, in 2022, data showed that 23.2% of children are developmentally off track, suggesting that nearly a quarter of young children may be experiencing delays in health, learning, or psychosocial development. Moreover, children without ECE are more likely to repeat grades; in the Philippines, 44% without ECE repeated grades compared to 30-31% with ECE. Research consistently shows that children who attended preschool outperform those who did not in fundamental skills like reading, writing, and mathematics. Existing studies globally emphasize the benefits of play-based learning on cognitive, social, and emotional development, but there is limited empirical research specifically focusing on its impact on Filipino early childhood learners. This study aims to bridge this gap by providing localized data on how play-based learning influences emotional development and academic performance. Moreover, there is limited exploration of the specific factors hindering its adoption, such as teacher perceptions, resource availability, and policy constraints, which will provide valuable insights for educators, policymakers, and parents on best practices for implementing play-based strategies.

This study aimed to examine the impact of play-based learning on the emotional development and academic performance of Filipino early childhood learners by investigating how it enhances cognitive abilities, emotional intelligence, and social competence. It addressed the challenges teachers face in implementing play-based learning and strengthened existing research to promote a balanced and engaging early education. The findings would benefit educators by providing insights for designing more effective lessons, assist policymakers in integrating play-based strategies into early childhood education, and help parents better understand the importance of play in fostering their child's overall growth.

Theoretical Conceptual Framework

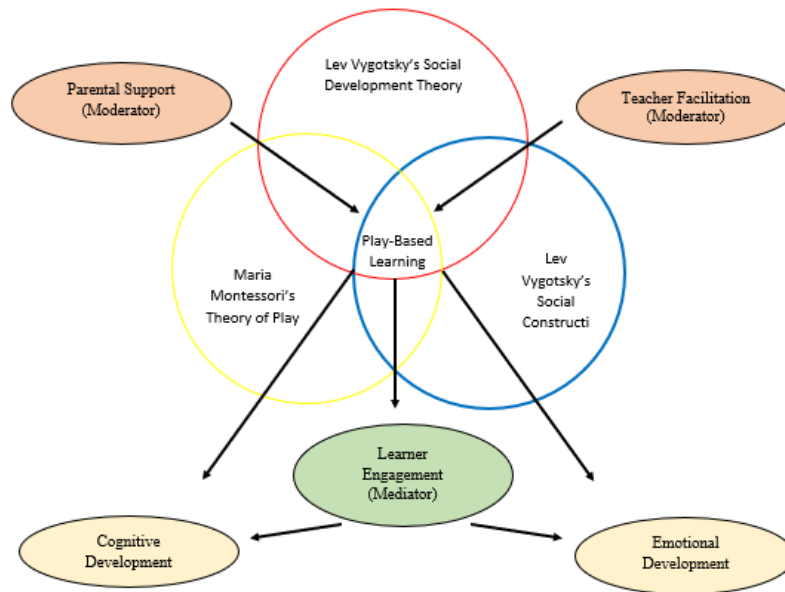
Play-based learning is a widely recognized approach in early childhood education, fostering cognitive, social, and emotional development among young learners. Play-based learning serves as a foundational approach in early childhood education, fostering cognitive, social, and emotional development among young learners. This study is anchored on three key theories that highlight the critical role of play in learning.

Lev Vygotsky's Social Development Theory emphasizes the critical role of social interaction in cognitive and socio-emotional development, asserting that learning is fundamentally a social process facilitated by more knowledgeable others (MKOs) such as teachers, parents, and peers (McLeod, 2024). Central to this theory is the Zone of Proximal Development (ZPD), which represents the gap between what a child can do independently and what they can achieve with guidance, highlighting the importance of scaffolding as temporary support that fosters higher-order thinking skills. Vygotsky's theory underscores the interconnectedness of cognitive and socio-emotional development, as social interactions not only shape reasoning and problem-solving but also foster emotional regulation, empathy, and relationship-building skills (Decir, et al, 2024). This holistic framework has profound educational implications, advocating for collaborative learning environments, reciprocal teaching, and scaffolding techniques that support both cognitive growth and socio-emotional well-being.

Maria Montessori's educational philosophy centers on the belief that children learn best through self-directed, hands-on experiences within a prepared environment. She advocated for the use of purposeful play materials that encourage exploration and discovery, fostering independence and intrinsic motivation. Montessori observed that such play not only supports cognitive development but also cultivates emotional resilience and social competence. Implementing play-based learning strategies inspired by Montessori's approach can thus promote holistic development, leading to improved academic outcomes and emotional well-being in early childhood learners (Montessori, 1976; Lillard, 2013).

Lev Vygotsky's *Socio-Constructivism Theory* emphasizes the fundamental role of social interaction in cognitive development. He posited that play creates a context in which children can advance their cognitive abilities by collaborating with peers and adults, thereby internalizing new skills and knowledge. Incorporating play-based learning within this framework facilitates not only academic learning but also the development of emotional regulation and social skills, as children navigate and interpret social dynamics through play (Ring, et.al, 2018). The schematic diagram below displays how the laws indirectly relate to the topic and how it is strongly supported by the three theories.

Figure 1
Schematic Diagram of Theoretical-Conceptual Framework of the Study



The conceptual framework of the study centered on examining how play-based learning influences the academic performance and emotional development of kindergarten pupils. It highlights play as a key driver of both cognitive and emotional growth. The study evaluates two main areas: academic performance (including language and literacy skills, and numeracy and problem-solving abilities) and socio-emotional development. Effectiveness is measured through pre- and post-assessments, with results analyzed using a T-test to determine significant changes.

Understanding the nature of the key variables in this study further clarifies how play-based learning may influence developmental outcomes in early childhood education. **Emotional development**, in this context, involves how young learners begin to recognize and manage their feelings, relate to others, and build confidence—skills that are essential in navigating both academic and social environments. Meanwhile, **cognitive development** refers to the gradual enhancement of children's thinking processes, including memory, problem-solving, language, and the ability to make sense of their experiences—capacities that are foundational in academic success.

Cognitive development in this study is further classified into two categories—language and literacy skills, and numeracy and problem-solving abilities. In this study, **language and literacy skills** refer to the early abilities of kindergarten learners to recognize, understand, and use spoken and written words. These skills include listening, speaking clearly, identifying sounds in words (such as long and short vowel sounds), beginning reading, and forming letters or simple words—essential foundations for effective communication and academic progress. **Numeracy and problem-solving abilities** refer to the basic understanding of numbers and the capacity to solve simple mathematical tasks. This includes recognizing quantities, performing addition and subtraction up to 20, and solving word problems using these operations. These skills help children apply logical thinking and develop strategies to approach everyday math situations with confidence.

One of the fundamental goals in conducting educational research is to promote holistic outcomes among learners. In line with this, the present study explored play-based learning as a potential strategy to support and enhance the emotional and cognitive development of kindergarten pupils. **Play-based learning**, as examined in this study, centers on purposeful experiences where children engage in exploration and discovery. It allows learners to interact with their environment in ways that promote curiosity, creativity, and meaningful learning.

The strategy's integration into classroom activities supports the alignment of instructional goals with developmentally appropriate practices, encouraging children's active participation in both structured and unstructured tasks. Through this alignment, improvements in both emotional and cognitive aspects may be observed—manifested in greater self-regulation, social interaction, confidence, as well as enhanced reasoning, attention, and early literacy and numeracy skills.

Statement of Purpose

This research aimed to determine the effectiveness of play-based learning strategies in enhancing the emotional aspect and academic performance of the kindergarten learners of Westbay Learning Center, Inc., Sangi, Toledo City, School Year 2024-2025. Specifically, it answered the following questions:

1. What was the pre- and post-assessment of the kindergarten learners in terms of their:
 - 1.1 socio-emotional domain;
 - 1.2 language and literacy skills; and
 - 1.3 numeracy and problem-solving abilities?
2. Was there a significant mean gain of the assessment of the kindergarten learners in terms of their:
 - 2.1 socio-emotional domain;
 - 2.2 language and literacy skills; and
 - 2.3 numeracy and problem-solving abilities?
3. Was there a significant difference in the mean gain between the control and experimental group?
4. What were the challenges in the implementation of play-based learning strategies in kindergarten classrooms?
5. Based on the findings, what interventions could be crafted to enhance the integration of play-based learning in early childhood education?

Statement of Null Hypothesis

Ho₁: There is no significant mean gain of the assessment of the kindergarten learners in terms of their socio-emotional domain, language and literacy skills, and numeracy and problem-solving abilities.

Ho₂: There is no significant difference in the mean gain between the control and experimental group.

Literature Review

Early childhood education (ECE) is a critical stage in a child's development, providing the foundation for cognitive, social, and emotional growth. Research indicates that around 90% of brain development occurs before the age of five, highlighting the importance of early learning experiences (McCartney & Diamond, 2020). Over time, education systems have evolved to recognize the significance of structured early learning environments in preparing children for formal schooling. The contributions of theorists such as Piaget and Vygotsky emphasize the role of active learning and social interaction in shaping a child's development (Gyekye-Ampofo et al., 2023). As a result, many countries have introduced policies to expand access to quality ECE, acknowledging its long-term impact on academic achievement and overall well-being.

Despite efforts to improve early childhood education, disparities in access and quality remain a major challenge. Socioeconomic factors often determine the availability of quality preschool programs, with children from disadvantaged backgrounds facing limited opportunities for early learning. Studies show that early exposure to education reduces dropout rates and enhances school readiness, yet not all children benefit equally from these advantages (McCartney & Diamond, 2020). Governments and international organizations continue to advocate for increased investment in ECE to address these inequalities and promote equitable access to early learning opportunities (Gyekye-Ampofo et al., 2023). Play-based learning is a pedagogical approach that integrates free and guided play into the curriculum to support children's academic and emotional growth. This approach shifts the focus from a traditional teacher-centered method to a more child-centered one, where children actively participate in learning through play (Khalil et al., 2022). Research indicates that play-based learning enhances children's problem-solving skills, communication abilities, and self-regulation, making it an effective method for early childhood education (Kheioh & Low, 2022).

Teachers who incorporate play-based strategies in their classrooms report higher engagement and motivation among students. Play-based learning encourages children to explore their surroundings, interact with peers, and express their emotions in a natural and supportive environment (Danniels & Pyle, 2022). Additionally, guided play provides opportunities for children to develop language skills, mathematical reasoning, and literacy through interactive activities such as storytelling, role-playing, and educational games (Kheioh & Low, 2022).

Emotional development is a crucial aspect of early childhood education, and play-based learning has been found to significantly contribute to children's ability to manage emotions and interact with others. Engaging in play allows children to express their feelings, understand social cues, and develop self-regulation skills (Danniels & Pyle, 2022). Research suggests that children who engage in structured play activities exhibit higher levels of emotional intelligence and resilience (Khalil et al., 2022).

Academic performance in early childhood education is often assessed through literacy, numeracy, and critical thinking skills. Play-based learning has been identified as an effective strategy in enhancing these skills by providing children with hands-on experiences that reinforce their understanding of various subjects (Kheioh & Low, 2022). Research suggests that children who engage in play-based activities demonstrate improved language development, problem-solving abilities, and cognitive flexibility.

In a study conducted among Malaysian teachers, it was found that play-based learning significantly contributes to children's academic success. Teachers reported that integrating play into lessons helped students better understand mathematical concepts, language skills, and critical thinking tasks (Kheioh & Low, 2022). Additionally, guided play activities such as storytelling and role-playing were shown to enhance children's vocabulary and comprehension abilities.

Teachers play a crucial role in implementing play-based learning strategies that create inclusive and supportive learning environments for all children. Through guided play and interactive activities, children develop the necessary skills to succeed in both academic and social settings. As early childhood education continues to evolve, recognizing the impact of play-based learning remains essential in fostering holistic child development.

METHODOLOGY

This section presents the methodology that was used in this study. It describes the research design, the research environment, the participants involved, and the instruments used to gather data. It also explains the procedures followed in collecting the data and the methods used to analyze the results to determine the effectiveness of play-based learning on the emotional and cognitive development of kindergarten learners.

Design

This study utilized an experimental two-group pre-test and post-test design to determine the impact of play-based learning on the emotional development and academic performance of early childhood learners. This design was appropriate because it allowed for the measurement of changes in the dependent variables—emotional development and academic performance—before and after the intervention, providing insights into the effectiveness of play-based learning. This approach provided valuable initial evidence on the effectiveness of play-based learning, which could inform future research and educational practices. The results were analyzed using statistical methods to determine whether the observed differences between pre-test and post-test scores are significant.

Environment

The study was conducted at West Bay Learning Center Inc., a private educational institution located in Sangi, Toledo City, offering pre-elementary, elementary, junior high school, and senior high school education. Committed to academic excellence and holistic development, the school provides a nurturing environment that integrates innovative teaching strategies with character formation. It ensures a well-rounded education, making it an ideal setting for this study on play-based learning in early childhood education.

Participants

The study involved 30 kindergarten participants, supported by a team of 4 educators, which included 3 teachers and 1 assistant teacher. The participants were distributed across two groups: K Kind and K Care, with 18 and 15 learners, respectively. However, during the asking of permission from the parents/guardians, 3 students from K Kind had expressed their disapproval of the request. Thus, only 30 parents' consents were obtained by the researcher.

Instrument

This study utilized two main instruments for the study. The assessment of the socio-emotional development will be taken from the Philippine Early Childhood Care Development (ECCD) Checklist. An ECCD checklist is designed for service providers like teachers to determine if a child is developing adequately or is at risk for developmental delays. While the academic performance was conducted through a test provided by the researcher. This researcher-made test was evaluated and subjected to validity and reliability testing to ensure its accuracy and consistency in measuring the intended constructs. It was evaluated by an expert in Early Childhood Care and Development to establish content validity and ensure alignment with developmentally appropriate practices. Reliability was assessed using statistical methods.

A dry run was conducted with 10-15 respondents to ensure clarity and functionality before full data collection. Results from the pilot test were analyzed for consistency, and necessary revisions were made. The finalized questionnaire adhered to ethical guidelines, ensuring confidentiality and voluntary participation. This approach guaranteed that the instrument effectively measures the impact of play-based learning on academic development.

Data Gathering Procedure

This section describes the procedures followed in gathering the data for the study. It explains how the researchers prepared for data collection, how the pre-test and post-test were conducted, and how the necessary information was recorded. It also outlines the steps taken to ensure that the data collection process was organized, accurately, and in line with ethical standards.

Pre-data Gathering. To ensure compliance with the school's research protocols, the researcher first obtained the approval from West Bay Learning Center Inc., along with an endorsement from the thesis adviser and research panel. Once institutional approval was granted, the researcher submitted the necessary documents to the Institutional Review Board (IRB) for ethical and technical review. This step ensured that the study adhered to ethical research standards before proceeding with data collection. Upon receiving the Notice to Proceed Certificate, the researcher coordinated with school administrators and teachers to finalize the research schedule and procedures. A preparatory meeting was conducted to discuss the study's objectives, ethical considerations, and the administration of research instruments. Teachers were briefed on their role in facilitating data collection, ensuring uniformity in implementation.

Actual Data Gathering. Once the Notice to Proceed Certificate was secured, the researcher conducted classroom observations over three weeks to examine how play-based learning influences students' emotional development (self-awareness, social skills, emotional regulation) and academic performance (language, literacy, and numeracy skills). A structured checklist and field notes were used to document behaviors, interactions, and learning progress. Observations took place during regular class hours to ensure an authentic learning environment. The teacher conducted a pre-assessment on learners' socio-emotional domain, language and literacy skills, and numeracy and problem-solving abilities. The researcher then conducted the intervention with the help of the teacher. After the intervention, the teacher administered a post-assessment to evaluate any changes in learners' skills and development. Additionally, semi-structured interviews were conducted with teachers to gather insights into the effectiveness of play-based strategies and the challenges they encounter. To support observational findings, the researcher also reviewed student progress reports and activity logs. All collected data were systematically organized to maintain accuracy and reliability for analysis. The table showed the topics together with its number of days allocation per intervention.

Table 1
Topics and Target Days for Data Gathering

Subject	Topic	Duration
Mathematics	Solving Word Problems in Addition	3 days
	Subtraction Up to 10	2 days
	Subtraction Up to 20	2 days
	Solving Word Problems in Subtraction	3 days
	Words with Long /a/ Sound	2 days
English	Words with Short /a/ Sound	2 days
	Words with Long /i/ Sound	2 days
	Words with Short /i/ Sound	2 days
	Words with Long /o/ Sound	2 days
	Words with Short /o/ Sound	2 days
Total number of days		22 days

Post-data Gathering. After data collection, the researcher organized and tabulated the quantitative data on emotional development and academic performance. The pre-test and post-test results were compared to measure the effectiveness of play-based learning. Descriptive and inferential statistical methods were applied to analyze the data objectively. Findings were presented in tables and statistical analyses to identify significant improvements in students' emotional and academic growth. All data were securely stored, and upon completion of the study, raw data would be properly disposed of to maintain confidentiality. The results would serve as the foundation for recommendations to enhance the integration of play-based learning in early childhood education.

Data Analysis

To analyze the data collected in this study, a control and experimental group was assigned. This design allowed the researcher to measure changes in the emotional development and academic performance of early childhood learners

before and after the implementation of play-based learning activities and comparing it to the results of the control group which does not receive the intervention.

Descriptive statistics, including mean and mean gain, was used to summarize and interpret the pre-test and post-test scores. To assess whether there is a significant difference between the pre-test and post-test results, a paired-sample t-test was used. To assess the significant mean gain between the control and experimental group, an independent t-test was used.

Data analyses were performed using statistical software, jamovi, to ensure precision in computation and interpretation. Jamovi is a new "3rd generation" statistical spreadsheet, designed from the ground up to be easy to use, jamovi is a compelling alternative to costly statistical products such as SPSS and SAS. The results would be presented through tables and graphical representations to highlight key trends and patterns observed in students' emotional and academic growth. The findings would then be interpreted based on statistical significance and supported by relevant literature, providing valuable insights into the impact of play-based learning on early childhood learners.

Ethical Considerations

The study was conducted according to the guidelines outlined in the Declaration of Helsinki (World Medical Association, 2013). Approval was obtained from the Research and Ethics Committee of the University of the Visayas, with Reference No. 20250254 dated May 21, 2025. Since the participants were minors, informed consent was obtained from their parents and guardians before their involvement. Confidentiality was maintained by anonymizing data and securely storing information. Participants' rights were respected, and they were given the freedom to withdraw at any time without repercussions. Transparency in research procedures was upheld, and all activities complied with institutional and ethical research standards.

RESULTS AND DISCUSSION

This chapter presents, interprets, and analyzes the data gathered to determine the effectiveness of play-based learning strategies in enhancing the emotional and cognitive development of kindergarten learners at Westbay Learning Center, Inc., Sangi, Toledo City for School Year 2024–2025.

Figure 2

Pre- and Post-Assessment of Learners

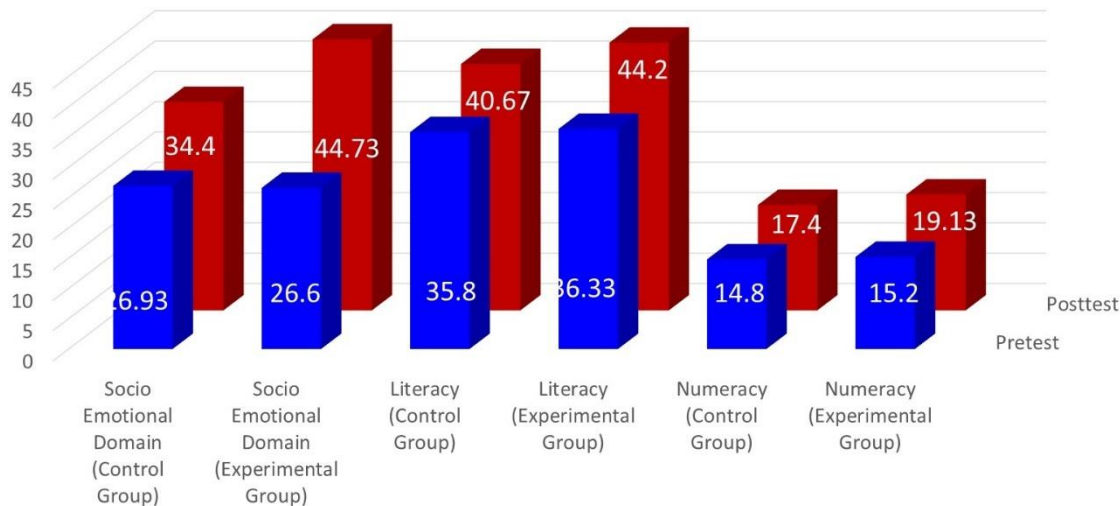


Figure 2 contains the graph of both pre- and post-assessment results across all domains in both groups. This revealed that while both the control and experimental groups showed improvement across all domains, the experimental group, which was exposed to play-based learning strategies, consistently achieved higher post-assessment results, notably higher mean gains too. These findings align with existing literature affirming the benefits of play-based approaches in early childhood education. Studies by Khalil et al. (2022), Danniels and Pyle (2022), and Kheioh and Low (2022) highlight how guided play fosters emotional resilience, language acquisition, and cognitive flexibility.

Hence, the study supports the integration of play-based strategies into the kindergarten curriculum as a means of promoting holistic development among young learners.

To determine if there's a significant change over time within each group, the paired sample t-test was used for the pre and posttest results of each domain. This statistical test is appropriate when assessing the effectiveness of an intervention by comparing two related measures from the same participants. A statistically significant result indicates that the observed improvements are unlikely due to chance, providing evidence of the intervention's impact.

Table 2
Mean Gain of the Assessment of Learners

Groups	Mean Pretest	Mean Posttest	Mean Gain	Statistic	p-value
Socio-Emotional Domain					
Control	26.93	34.4	7.47	-4.61	<.001
Experimental	26.60	44.73	18.13	-16.8	<.001
Language and Literacy Skills					
Control	35.8	40.67	4.87	-13.9	<.001
Experimental	36.33	44.20	7.87	-14.5	<.001
Numeracy and Problem-Solving Abilities					
Control	14.8	17.4	2.60	-8.01	<.001
Experimental	15.2	19.13	3.93	-7.99	<.001

Note. $H_a \mu_{\text{Measure 1}} - \mu_{\text{Measure 2}} \neq 0, df=14$

Table 2 revealed the paired sample t-test results of both control and experimental group across all domains. It showed statistically significant improvements in all domains in both control and experimental group. While both groups improved, the experimental group exhibited a much stronger effect, indicating that play-based learning had a greater impact on emotional growth and contributed more meaningfully to literacy and numeracy development. Although the gains were comparable, the results affirm that both traditional and play-based approaches positively influence young learners' socio-emotional and cognitive development. The findings support previous research highlighting the benefits of play-based learning—specifically Danniels and Pyle (2022) in developing emotional regulation and social understanding, Kheioh and Low (2022) enhances language skills and Khalil et al. (2022) fosters critical thinking and understanding of math concepts through interactive exploration.

To determine if there's a significant difference in outcomes between the two teaching strategies, the independent sample T-test was used. This test compared the posttest scores of the control and experimental groups across the socio-emotional domain, language and literacy skills, and numeracy and problem-solving abilities. This analysis provides evidence on the comparative effectiveness of child-centered versus traditional teaching methods.

Table 3
Mean Gain Difference Between Control and Experimental Group

	Mean Gain	statistic	p value	Decision
Socio-Emotional Domain				
Control	7.47	-5.48	<.001	Reject Ho
Experimental	18.13			
Language and Literacy Skills				
Control	4.87	-4.65	<.001	Reject Ho
Experimental	7.87			
Numeracy and Problem-Solving Abilities				
Control	2.60	-3.39	0.002	Reject Ho
Experimental	3.93			

Note. $H_a \mu_{\text{Control}} \neq \mu_{\text{Experimental}}$

Table 3 presented the independent samples t-test results comparing the mean gain scores between the control and experimental groups across three developmental domains: socio-emotional, language and literacy skills, and numeracy and problem-solving abilities. It showed a statistically significant difference in posttest scores between the control and experimental groups in all domains. This indicated that the experimental group, which received play-based instruction, demonstrated significantly better socio-emotional and cognitive development than the control group. Furthermore, the findings across all three domains suggest that play-based learning is a beneficial instructional strategy that significantly enhances kindergarten learners' holistic development—including emotional, language, and cognitive growth—compared to traditional teaching methods.

Summary of Findings

The findings of the study reveal that while both the control and experimental groups showed significant improvements across domains. The experimental group consistently achieved higher posttest scores and mean gain. These results suggest that play-based learning is more effective than traditional methods in promoting holistic development among kindergarten learners, particularly in fostering emotional growth, enhancing language skills, and improving cognitive abilities. The outcomes align with existing research that emphasizes the value of guided play in supporting early childhood development.

Challenges in the Implementation of Play-Based Learning Strategies in Kindergarten Classrooms

Despite the recognized benefits of play-based learning in early childhood education, its implementation in actual classroom settings is not without obstacles. The data gathered through interviews with kindergarten teachers revealed several recurring challenges that hinder the full integration of play-based strategies into daily instruction. While educators acknowledge the importance of play in fostering emotional, social, and cognitive development, various systemic, professional, and cultural factors limit their ability to apply these methods consistently and effectively. The following themes emerged from the responses of the participants, illustrating the multifaceted barriers they encounter in promoting a play-based approach within the context of formal schooling.

Challenge 1: Limited Availability of Learning Materials and Toys

One of the most pressing challenges identified by all teacher respondents was the lack of adequate learning materials and toys necessary for a successful play-based learning environment. Three out of five participants mentioned that financial constraints limit the school's ability to purchase developmentally appropriate educational toys and manipulatives. Teachers 1 and 2 all pointed out that *"Limited budget for educational toys..."* while Teacher 3 emphasized *"Lack of materials..."*

Despite these limitations, teachers showed resilience by finding creative solutions. While the lack of materials is a barrier, teachers are employing resourcefulness and innovation, such as using recyclable items and printable worksheets from Facebook teacher groups, to provide meaningful play-based experiences.

Challenge 2: Classroom Management Difficulties During Free Play

Two of the five teachers identified behavioral issues during free play as a major challenge. Unstructured playtime, while beneficial for socio-emotional development, also opens the door to disruptive behavior if not properly guided. Teacher 1 explained, *"Difficulty managing children's behavior during free play."* While Teacher 3 experienced the same and addressed it proactively, *"Created structured play schedules and used visual rules (charts) to guide behavior."*

This suggests that while free play is essential, it requires structured guidelines and visual cues to help children manage their behavior and make positive choices. It also highlights the importance of teacher presence and scaffolding during play to ensure that learning objectives are still met in a safe, constructive environment.

Challenge 3: Inadequate Physical Space for Play-Based Setups

Another barrier raised by teachers was the limited space in classrooms, which restricts the setup of various learning and play corners. This spatial constraint affects how play areas can be organized and rotated, limiting opportunities for diverse hands-on experiences. Teacher 4 expressed this clearly, *"Limited classroom space."* To adapt, she shared how she utilized the available space more efficiently, *"Carefully layout the classroom for play corners."*

This adaptation shows how teachers are compensating for spatial challenges through intentional classroom design, maximizing whatever space is available to still accommodate play-based activities.

Challenge 4: Time Constraints in the Curriculum

A common concern among teachers was the lack of time to integrate play due to the tight structure of the curriculum and academic requirements. Teachers feel pressured to meet learning competencies, often leaving limited time for play-based instruction. Teacher 4 explained, *"Time constraints and limited learning materials."* While Teacher 5 said to overcome this, *"Organize the schedules properly and be resourceful."*

This highlights the need for flexible scheduling and administrative support that allows teachers to weave play-based activities into daily routines without sacrificing curriculum coverage. It also points to a systemic challenge that may require curriculum policy adjustments.

Interventions to be Crafted to Enhance the Integration of Play-Based Learning in Early Childhood Education

Considering the challenges encountered in implementing play-based learning strategies in kindergarten classrooms, it is imperative to explore targeted interventions that can support and strengthen its integration into early childhood education. The insights gathered from teacher interviews reveal not only the obstacles they face but also the areas where meaningful support can be introduced. These interventions aim to address systemic limitations, build teacher capacity, and promote a deeper understanding of the educational value of play among all stakeholders. The following themes present the key areas for intervention as drawn from the experiences and perspectives of kindergarten teachers.

Intervention 1: Resourcefulness and Use of DIY or Recycled Materials

One of the most common barriers identified by the teachers was the limited budget for educational toys and materials. To address this, teachers displayed commendable resourcefulness, using do-it-yourself (DIY) tools and recycled materials to create engaging and educational play experiences. This adaptive approach allowed teachers to continue implementing play-based learning despite material constraints. Teacher 2 mentioned, *"Make DIY learning tools and be resourceful."* While Teacher 1 said, *"Be resourceful."* Teacher 3 also noted, *"Use recycled materials and carefully layout the classroom for play corners."* And Teacher 4 mentioned, *"Organize the schedules properly and be resourceful."*

By crafting manipulatives and learning aids from available resources, teachers ensured that learning remained hands-on, creative, and engaging even in the absence of commercially produced educational toys.

Intervention 2: Professional Development and Continuous Training

Teachers acknowledged the value of training in improving their capacity to implement play-based learning. Most had attended PEAC-sponsored sessions and school-based training sessions, yet they unanimously expressed the need for more focused professional development, particularly on strategies for integrating play into academic content. Teacher 3 said, *"Trainings in PEAC and school-based trainings."* While Teacher 5 said, *"More trainings about play-based and more learning tools."*

This reflects a clear recognition of the importance of continuous upskilling in play-based pedagogy and highlights the desire for more structured support through workshops, seminars, and expert-led learning communities that focus specifically on the effective design, management, and assessment of play-based strategies.

Intervention 3: Structured Play Routines and Visual Guides

A few teachers encountered challenges related to managing student behavior during free play. To address this, they developed structured play routines, using visual aids like charts and rules to guide children's behavior. These interventions helped promote discipline, independence, and smoother transitions between play and instructional time. Teacher 4 said, *"Created structured play schedules and used visual rules (charts) to guide behavior."* Teacher 5 explained, *"Difficulty managing children's behavior during free play."*

This shows a shift toward a guided play approach, where freedom and exploration are balanced with structure and expectations. Such strategies also help reduce chaos and support children in developing self-regulation and collaborative behavior.

Intervention 4: Leveraging Free and Accessible Teaching Resources

Teachers often relied on DepEd modules and free downloadable worksheets from local teacher Facebook groups to support their play-based instruction. These materials served as ready-to-use resources, especially when custom or physical learning tools were unavailable. Teacher 4 said, *"DepEd modules, printable worksheets from local FB teacher groups."*

These resources prove that collaborative digital communities and official learning packages can effectively supplement classroom instruction. However, it also underscores the need for more curated and play-focused content that aligns with the goals of early childhood education.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study revealed that the play-based learning strategy is more effective than traditional methods. Although both approaches contribute to learners' improvement across socio-emotional, language and literacy, and numeracy domains, it is evident that play-based learning can be a transformative approach in early childhood education. What makes play-based learning so impactful is its ability to provide children with meaningful, engaging, and developmentally appropriate experiences. Through guided play, learners actively explore emotions, interact socially,

and practice communication skills—fostering growth in the socio-emotional domain. Similarly, activities like storytelling, role-playing, and games naturally promote vocabulary development, comprehension, and expressive language, enhancing language and literacy skills. In numeracy and problem-solving, manipulatives and interactive tasks embedded in play allow children to visualize abstract concepts and develop logical reasoning in a low-pressure setting.

The findings of this study affirm that play-based learning significantly enhances both the emotional development and academic performance of kindergarten learners at Westbay Learning Center, Inc. Teachers observed that children involved in play-based activities demonstrated improved social interactions, emotional expression, and cognitive engagement, all contributing to a more holistic learning experience. However, the implementation of these strategies is often constrained by limited instructional time, lack of professional training, and minimal stakeholder involvement. Addressing these challenges through intentional time allocation, targeted teacher development programs, and active engagement of parents and the community can greatly support the successful integration of play-based learning. Ultimately, this study underscores that when properly supported, play-based learning not only aligns with the principles of early childhood education but also nurtures emotionally resilient, socially competent, and academically prepared young learners.

Recommendations

Based on the findings of this study, it is clear that while play-based learning benefits young learners' emotional and academic development, its implementation faces several challenges. To address these, the following recommendations are proposed to enhance the effective integration of play-based strategies in kindergarten classrooms.

1. The Department of Education and school administrators should consider revising curriculum guides and daily schedules to allocate dedicated time for both structured and unstructured play. Recognizing play as a core instructional method rather than an optional activity will support the consistent application of play-based learning.
2. Schools and training institutions should offer continuous professional development focused specifically on play-based pedagogy. This includes hands-on workshops, classroom demonstrations, and mentoring programs that equip teachers with the skills to design, facilitate, and assess play-based activities effectively.
3. Teacher education institutions must integrate comprehensive training on play-based learning into their curricula. Pre-service teachers should be given opportunities to observe and practice developmentally appropriate play strategies in real classroom settings.

Future researchers may conduct longitudinal studies to examine the sustained impact of play-based learning on learners' academic and emotional development beyond the kindergarten level. Tracking students overtime can provide deeper insights into how early play-based strategies influence later academic success and socio-emotional resilience. It is recommended that future studies examine the effectiveness of different types of play (e.g., structured vs. unstructured, indoor vs. outdoor, guided vs. free play) in developing specific learning domains. This can help identify which forms of play are most beneficial for targeted skills.

REFERENCES

- Alotaibi, M. S. (2023). Factors influencing early childhood educators' use of digital educational aids: A sequential explanatory study. SAGE.
- Auxier, B., Anderson, M., Perrin, A., & Turner, E. (2020, July 28). Children's engagement with digital devices, screen time. Pew Research Center. Retrieved from <https://www.pewresearch.org/internet/2020/07/28/childrens-engagement-with-digital-devices-screen-time/>
- Bautista, A., Bernardo, A. B. I., & Tan, M. (2019). Play-based learning in early childhood education: Perspectives from Filipino educators. *Early Child Development and Care*, 189(7), 1123-1140.
- Boryga, A. (2022, August 5). For young kids, the power of play-based learning. Edutopia. <https://www.edutopia.org/article/young-kids-power-play-based-learning/>
- Bustos-Orosa, M. A. (2024). Early childhood education in the Philippines. In *International handbook on education in South East Asia* (pp. 1-26). Springer Nature Singapore.
- Commission on Filipinos Overseas – Pilot Services Office. (n.d.). Revised Philippine ECCD checklist. Retrieved February 25, 2025, from https://www.cfo-pso.org.ph/pdf/orientationtrainingontheK_12/revisedphilippineECCDchecklist.pdf
- Courtois, S. L., Ezeugwu, C. R., Fajardo-Tovar, D. D., Nowack, S. K., Okullo, D. O., Bayley, S., ... & Ramchandani, P. (2024). Learning through play in Global Majority countries: Reflections from the PEDAL centre on understanding and adapting the concept in four different contexts. *International Journal of Play*, 13(3), 228-253.
- Cruz, M. C., & Santos, R. P. (2022). The role of play in early childhood education: Emotional intelligence and self-regulation in Filipino classrooms. *Journal of Educational Psychology*, 34(2), 98-115.

- Danniels, E., & Pyle, A. (2022). Inclusive play-based learning: Approaches from enacting kindergarten teachers. *Early Childhood Education Journal*, 51(7), 1169-1179. <https://doi.org/10.1007/s10643-022-01369-4>
- DECIR, E. G. B., Capili, S. R., Cruz, J. B. D., Escarlos, G. S., Remorosa, M. M. R., & Balase, M. M. H. (2024). VYGOTSKYS SOCIAL DEVELOPMENT THEORY: THE ROLE OF SOCIAL INTERACTION AND LANGUAGE IN COGNITIVE DEVELOPMENT. *International Journal Of All Research Writings*, 6(6), 10-13.
- DepEd. (2012). Kindergarten curriculum framework. Department of Education, Philippines.
- Develop Learn Grow. (n.d.). Improve memory and increase focus in children – Brain hack. Retrieved February 25, 2025, from <https://developlearngrow.com/improve-memory-and-focus-in-children/>
- Ghosh, U. (2024, December). The role of play-based learning in enhancing cognitive and emotional development in early childhood. *International Journal for Multidisciplinary Research*. Retrieved from <https://www.ijfmr.com/papers/2024/6/34144.pdf>
- Gonzales, J. R. (2020). Parental perceptions of play-based learning in the Philippines. *Asian Journal of Education and Development*, 7(1), 45-62.
- Gyekye-Ampofo, M., Opoku-Asare, N. A., & Andoh, G. B. (2023). Early childhood care and education in the 21st century: A review of the literature. *British Journal of Education*, 11(4), 81-95. <https://doi.org/10.37745/bje.2013/vol11n48195>
- Khalil, N., Aljanazrah, A., Hamed, G., & Murtagh, E. (2022). Exploring teacher educators' perspectives of play-based learning: A mixed method approach. *Education Sciences*, 12(2), 95. <https://doi.org/10.3390/educsci12020095>
- Kheioh, S. L., & Low, H. M. (2022). A case study of Malaysian teachers' practice of play-based learning in preschool. *Kajian Malaysia*, 40(1), 19-38. <https://doi.org/10.21315/km2022.40.1.2>
- Lillard, A. S. (2013). Playful learning and Montessori education. *NAMTA Journal*. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1077161.pdf>
- McArdle, J. (n.d.). Benefits of play-based learning in early education. My Teaching Cupboard. Retrieved February 25, 2025, from <https://www.myteachingcupboard.com/blog/benefits-of-play-based-learning/>
- McCartney, C. M., & Diamond, L. L. (2022). Early childhood education. *Early Childhood Education*. <https://doi.org/10.4324/9780367198459-reprw65-1>
- McLeod, S. (2024, August 9). *Vygotsky's theory of cognitive development*. Simply Psychology. <https://www.simplypsychology.org/vygotsky.html>
- Piaget, J. (1962). Play, dreams, and imitation in childhood. Norton.
- Pyle, A., & Danniels, E. (2017). A continuum of play-based learning: The role of the teacher in play-based pedagogy and the fear of hijacking play. *Early Education and Development*, 28(3), 274-289.
- Reyes, L. A. (2018). The effects of play-oriented classrooms on student engagement and conflict resolution. *Journal of Southeast Asian Education*, 12(1), 56-73.
- Ricaplanca, M. B., De Guzman, M. A., & Bautista, C. (2024). Utilization of Project Kind-Er (Engagement in Reading) to strengthen the foundation of learning in kindergarten. *JPAIR Multidisciplinary Research*, 58(1), 106-126.
- Ring, E., O'Sullivan, L., Ryan, M., & Burke, P. (2018, October). A melange or a mosaic of theories? How theoretical perspectives on children's learning and development can inform a responsive pedagogy in a redeveloped primary school curriculum. Mary Immaculate College, Limerick.
- Roberts, C., & Fletcher, K. (2024, July 15). The learning hidden in play. New America. <https://www.newamerica.org/education-policy/edcentral/the-learning-hidden-in-play/>
- Singer, D. G., Golinkoff, R. M., & Hirsh-Pasek, K. (2014). Play = Learning: How play motivates and enhances children's cognitive and social-emotional growth. Oxford University Press.
- Situation of Children Philippines. (n.d.). Early childhood education. Retrieved February 25, 2025, from <https://situationofchildren.org/child-rights-dimensions/learn/early-childhood-education>
- Taber, K. S. (2020). Mediated learning leading development—The social development theory of Lev Vygotsky. *Science education in theory and practice: An introductory guide to learning theory*, 277-291.
- Tanaka, H., Villanueva, C., & Ramos, E. (2021). Structured play and literacy development in multilingual settings. *International Journal of Early Childhood Education*, 49(4), 301-319.
- Tayag-Binuya, H., & Tongson, E. (2021, December). Preparing children for kindergarten: Practices and concerns of low-income stay-at-home peri-urban mothers. ResearchGate. Retrieved from <https://www.researchgate.net/publication/371078683>
- The jamovi project (2024). jamovi (Version 2.5) [Computer Software]. Retrieved from <https://www.jamovi.org>
- Ulep, V. G. T., Casas, L. D. D., Manuel, A. C. G., Mendoza, J. P. D., Bagas, J., & Dela Luna, K. L. G. (2024, May). Behind the slow start: An assessment of early childhood care and development in the Philippines. Philippine Institute for Development Studies. Retrieved from <https://pidswebs.pids.gov.ph/CDN/document/pidsdps2404.pdf>
- Villanueva, R. T. (2017). Socioeconomic disparities in early childhood education: The role of play in bridging the gap. *Philippine Journal of Educational Research*, 15(2), 78-94.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.