



Play-Based Learning Strategies on Class Engagement and Performance of Kindergarten Learners

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ABSTRACT

This study assessed how play-based learning strategies connect to kindergarten learners of the classroom engagement and academic performance in the Mandaue City Division, Kindergarten North District, during the School Year 2025–2026. Per Vygotsky's Sociocultural Theory and Piaget's Constructivist Theory, the study focused on the use of role-playing, games, and manipulatives as everyday so the teaching practices. It also considered our teacher characteristics such as age, years of experience, and educational attainment to better understand how these may shape classroom practices. Using a descriptive-correlational design, data were gathered through a researcher-developed questionnaire, an adapted research tool, and learners' progress report records. It followed with Early Childhood Care and Development (ECCD) standards. The data were analyzed using descriptive statistics and Pearson correlation through JAMOVI software. Results showed that our teachers consistently incorporated on play-based strategies in their lessons, creating a more interactive and child-friendly learning environment. Learners showed improved attention span and active participation, which were reflected in better literacy and numeracy performance. From the first to the third quarter as indicated. The results further revealed us a strong and significant relationship between engagement and academic performance. Among the strategies, manipulatives showed the strongest link to both literacy and numeracy outcomes, while games were more associated with numeracy improvement. Role-playing enhanced our engagement but did not directly predict academic gains. In summary, the study employed that when learning is meaningful, hands-on, and enjoyable, young learners become more engaged. And our learners perform better academically. These insights lead us to the development of the CARLA Play-Based Instructional Model. Then it supports teachers in designing structured, child-centered, and engaging lessons that integrate play with clear literacy and numeracy goals.

Keywords: *play-based learning, engagement, literacy, numeracy, kindergarten*

INTRODUCTION

In today's rapidly changing educational landscape, kindergarten teachers face a unique challenge: balancing fun and focus on the classroom. At this early stage of learning, young children are naturally curious and eager to play—yet they are also easily distracted and often struggle with short attention spans. With the rise of gadgets and digital entertainment, keeping learners engaged in meaningful learning has become even more challenging. Globally, many experts and education advocates support the integration of play in early childhood classrooms. Parker et al. (2022) emphasized that guided play nurtures academic skills and supports emotional and social growth. In the Philippines, Allee-Herndon et al. (2022) found that incorporating purposeful play activities in kindergarten classrooms helped boost children's literacy skills, particularly in public schools with limited resources. A local study by Dela Cruz (2023) in Cebu City also revealed that learners who engaged in role-play and hands-on materials showed better attention and were more eager to participate in class activities. These



studies show a shared understanding: combining fun and learning leads to more effective educational outcomes for young children.

This study explored play-based learning strategies—specifically role-playing, games, and manipulatives—as effective tools to promote class engagement and enhance academic development among kindergarten pupils. These playful strategies aimed to make learning more enjoyable and interactive while helping children stay focused and build essential skills. By integrating purposeful play into daily instruction, teachers could create learning environments that encourage active participation, collaboration, and creative problem-solving among young learners.

This research was inspired by the growing concern over young learners’ declining focus and limited classroom participation. On a global scale, UNESCO (2023) reported that early childhood learners are becoming more passive in school settings, often due to too much screen exposure at home. In Southeast Asia, education ministries have emphasized the need for more engaging and innovative learning approaches to combat early learning loss. In the Philippines, the Department of Education (DepEd) strongly supports play-based instruction as outlined in its Kindergarten Policy Framework.

The framework encouraged developmentally appropriate and inclusive teaching methods that support holistic growth among young learners. At the local level, teachers within the Mandaue City Division Kindergarten North District expressed concerns about learners’ increasing reliance on gadgets and their difficulties in sustaining attention during classroom activities. Although play-based elements were already embedded in the kindergarten curriculum, there remained a need for more structured and intentional strategies that clearly connect play with academic development. These observations suggested a growing need to examine how developmentally appropriate practices could be strengthened to foster deeper engagement and meaningful participation in early childhood classrooms.

Given this context, the purpose of this study was to investigate the impact of play-based learning strategies on the class engagement and performance of kindergarten learners in the Mandaue City Division Kindergarten North District for School Year 2024–2025. This research sought to provide a clearer understanding of how playful, yet purposeful teaching practices addressed common classroom challenges, particularly learners’ short attention spans and varying levels of participation, while promoting stronger academic foundations. By examining the relationship between play-based strategies and learner outcomes, the study aimed to contribute evidence-based insights that informed instructional planning and enhanced developmentally appropriate practices in early childhood education.

This study was important to various stakeholders within the education sector. Kindergarten learners were advantaged by being more involved and performing well in school through fun and relevant age-appropriate activities. Educators were able to use the results to improve their classroom practices, ensuring learning became effective and enjoyable. School administrators were guided towards creating training modules and classroom materials that facilitated play-based practices. Parents gained a deeper understanding of the role that play played in their child’s development. Policymakers were able to use this study when developing or refining policies governing early childhood education. Finally, researchers and future researchers were able to extend the findings of the study to further investigate play-based instruction in various settings.

REVIEW OF RELATED LITERATURE

This section presents scholarly literature relevant to the study titled “Bridging Fun and Focus: Investigating the Impact of Play-Based Learning Strategies on Class Engagement and Performance of Kindergarten Learners.” The review is categorized according to the study's variables: the independent variable (play-based learning strategies) and the dependent variables (class engagement and academic performance). This review draws upon international, national, and local sources from peer-reviewed journals, books, and research articles.



Play-Based Learning Strategies. Play-based learning strategies are widely recognized as developmentally appropriate instructional practices for early childhood education. According to Parker et al. (2022), guided play promotes cognitive and emotional development. In their international study, they found that structured play experiences, including role-playing, games, and the use of manipulatives, contribute to active learning environments and deeper student engagement. These strategies serve as tools for developing problem-solving, communication, and critical thinking skills among young learners.

Allee-Herndon et al. (2022) supported these findings in the Philippine context, stating that purposeful play-based learning improves academic skills and fosters creativity and social development. Their study emphasized that children tend to retain information more effectively when teachers integrate storytelling, dramatization, and educational games into daily lessons.

Balladares et al. (2023) further confirmed the positive impact of game-based strategies in preschool classrooms in the Philippines. Their study on math board games found that children exhibited better numeracy skills and motivation to learn when they engaged in play-centered instruction.

Learner Engagement. Class engagement is a vital outcome of play-based learning, particularly in maintaining learners' attention and participation. Vygotsky's Socio-Cultural Theory (1978) suggests that interactive learning experiences through social play enhance learners' ability to stay focused and connected during lessons. As a form of social interaction, role-playing allows learners to negotiate roles, follow instructions, and develop self-regulation. Dela Cruz (2023) reported that kindergarten students in Cebu City who participated in interactive, hands-on activities showed significant improvement in classroom participation. Teachers noted that incorporating manipulatives and dramatization increased the learners' enthusiasm and willingness to engage in classroom tasks. These findings are aligned with Piaget's (1952) theory, which emphasizes that children in the preoperational stage benefit from symbolic and hands-on play as it reinforces concept acquisition.

UNESCO (2023) emphasized the global concern about early learning engagement due to young children's overexposure to gadgets. The organization recommended play-based interventions to refocus learners' attention on meaningful and interactive experiences, especially during the early years.

The use of play-based strategies in academic instruction has also been shown to impact learners' literacy and numeracy performance. Piaget (1952) argued that children construct knowledge through hands-on exploration. Manipulatives, therefore, provide opportunities for young learners to visualize abstract concepts, aiding both literacy (e.g., phonemic awareness) and numeracy (e.g., counting and sorting).

In the study by Allee-Herndon et al. (2022), learners who experienced a variety of play-based activities demonstrated higher achievement in reading and math benchmarks. Similarly, studies by Balladares et al. (2023) revealed that game-based math instruction improved both test scores and learner confidence in number-related tasks. A local study by Dela Cruz (2023) concluded that teachers who regularly employed play-based methods observed notable academic gains among their students. The learners performed better in diagnostic and quarterly assessments in both literacy and numeracy subjects.

Altogether, the reviewed literature strongly supported the integration of play-based strategies in kindergarten classrooms to enhance both learner engagement and academic performance. International and local studies confirmed that the use of role-playing, games, and manipulatives fosters attention, motivation, and conceptual understanding in young learners. These findings highlighted the relevance and timeliness of the present study, which sought to determine the relationship between play-based instructional strategies and the focus and academic growth of kindergarten pupils in the Division of Mandaue City- North District.

METHODOLOGY



Design

This study employed a descriptive correlational research design, which was most appropriate for determining the extent to which two or more variables were related. In this case, the study aimed to examine the relationship between play-based learning strategies (role-playing, games, and manipulatives) and the class engagement and academic performance of kindergarten learners. The descriptive component helped in identifying the practices of teachers regarding play-based instruction, while the correlational component measured the degree to which these strategies influenced learners' attention, participation, and academic development.

This design was selected because the research did not involve manipulating variables but instead focused on capturing existing conditions and exploring possible connections. The findings provided insights into whether teachers' use of specific play-based approaches was significantly associated with higher learner engagement and performance. This was highly relevant to the research questions that sought to explore the influence of these strategies in natural classroom settings.

Environment

The study was conducted in the North District of Mandaue City Division, Department of Education, specifically in six public elementary schools: Basak, Labogon, Leonard Wood, Opao, Paknaan, and Umapad Elementary Schools. These schools collectively house around fifty kindergarten teachers, providing a diverse and relevant group of participants. The district is committed to delivering quality early childhood education through the K to 12 Basic Education Program and implements developmentally appropriate practices aligned with the Early Childhood Care and Development (ECCD) system and the National Early Learning Framework (NELF). With play-based strategies already in used across classrooms, this environment offered a suitable context to explore how such approaches influence classroom engagement among kindergarten learners.

Participants and Sample Size

The participants of this study consisted of 50 kindergarten teachers who were currently assigned in the North District of the Mandaue City Division. Quota sampling was used to ensure adequate representation across the district. These teachers were selected based on their direct involvement in early childhood education and their familiarity with the implementation of play-based learning strategies in actual classroom settings.

To ensure the quality and relevance of the data, inclusion criteria included: (1) current employment as a kindergarten teacher within the North District, (2) at least three years of experience in early childhood education, and (3) willingness to voluntarily participate in the study. Teachers who were on leave or who had less than three years of experience were excluded. By focusing on educators with established teaching backgrounds, the study captured meaningful insights into the influence of play-based learning strategies on classroom engagement.

Sampling Technique

This study used quota sampling, a non-probability technique that involved selecting participants according to specific characteristics that were relevant to the research goals. In this case, the focus was on kindergarten teachers within the North District who met set criteria, such as their teaching experience and current involvement in early childhood education. Quota sampling was chosen because it allowed the researcher to intentionally include a balanced number of participants who were in the best position to share meaningful insights about play-based learning. Rather than aiming for randomness, this method ensured that the voices gathered reflected the practical realities of those who directly implemented these strategies in the classroom.

Instrument



To address the research problems, this study utilized three instruments aligned with each sub-problem. The tools were designed to gather both perceptual and performance-based data relevant to play-based learning strategies, learner engagement, and academic performance in kindergarten classrooms.

Sub-problem 1: Use of Play-Based Learning Strategies. To examine the frequency and nature of play-based learning strategies used by kindergarten teachers, a researcher-made questionnaire was employed. This instrument, though not standardized, underwent reliability testing using Cronbach's Alpha to determine internal consistency prior to full implementation. The questionnaire included items focused on common play-based approaches such as role-playing, games, and the use of manipulatives. A 5-point Likert scale (1 = Never to 5 = Always) was used to measure how frequently each strategy was applied in classroom settings. The items were guided by key learning strands from the National Early Learning Framework (NELF) and the ECCD Omnibus Policy (DepEd Order No. 47, s. 2016), ensuring relevance to the Philippine early childhood education context.

Sub-problem 2: Learner Engagement. To assess learner engagement, the study adapted an eleven-item instrument developed by Kassab et al. (2023). Originally created to measure student engagement in problem-based learning tutorials, this tool was contextualized for play-based learning settings. In this study, the "tutorials" were represented by structured play-based classroom activities. The instrument covered three dimensions of engagement: cognitive, emotional, and behavioral. Reported construct reliability values for the original tool were 0.75 for cognitive engagement, 0.80 for emotional engagement, and 0.80 for behavioral engagement, indicating acceptable reliability. Responses were based on the teachers' firsthand observations of their learners during regular classroom activities, aligned with the ECCD Council's emphasis on authentic, observation-based assessment.

Sub-problem 3: focused on the academic performance of learners in literacy and numeracy, which was determined using data from the Kindergarten Progress Report Card. The progress report card served as the official school document that summarized learners' developmental performance based on continuous classroom observation and assessment. It was anchored on the ECCD Checklist, which functioned as the foundational and detailed observation tool for assessing a child's holistic development. While the ECCD Checklist recorded specific skills demonstrated independently, with assistance, or not yet developed, these results were translated into the Kindergarten Progress Report Card using developmental descriptors: 90–100 indicated Advanced, 85–89 denoted Proficient, 80–84 represented Moving Towards Mastery/Approaching Proficiency, 75–79 corresponded to Developing, and below 75 was classified as Beginning. Both instruments were aligned, particularly in the domains of Language Development and Cognitive Development, which corresponded to Language, Literacy, and Communication, and Numeracy and Thinking Skills in the report card. For this study, the learners' literacy and numeracy performance was based on their quarterly ratings reflected in the progress report card, and the class mean rating in both areas was computed per teacher and treated as a representative indicator of the group's academic performance. This developmentally appropriate approach emphasized growth and mastery of skills rather than numerical test scores.

By combining teacher-reported instructional practices and classroom observations with actual learner outcomes drawn from the progress report card, the study ensured a triangulated and comprehensive understanding of how play-based learning strategies influenced kindergarten learners' engagement and academic development.

Data Gathering Procedure

The data gathering process was divided into three phases: pre-data collection, actual data collection, and post-data processing.

Pre-data gathering: Approval was first sought from the University of the Visayas Graduate School and the Schools Division Superintendent of Mandaue City Division. Approval from the Research Ethics Committee (REC) was also secured. Once all clearances were obtained, an orientation was held with the participants to explain the study's purpose, procedures, confidentiality measures, and their rights as voluntary participants. Informed consent forms were distributed and collected prior to any data collection.



Actual data gathering: The actual data collection was carried out by the researcher herself. She sent and administered the validated online questionnaires to the fifty (50) participating kindergarten teachers from the North District of the Department of Education – Mandaue City Division. Prior to sending the online form, the researcher coordinated with each school head to inform them of the study and requested assistance in facilitating communication with the teachers. The researcher personally contacted the respondents through online platforms to ensure proper distribution and submission of responses without disrupting regular class instruction.

Each teacher received the online questionnaire link through email or a secured messaging platform, accompanied by clear instructions and a brief orientation on the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. Participants were given sufficient time—approximately 20 to 30 minutes—to accomplish the survey at their convenience. The researcher provided virtual assistance to address any concerns or clarifications related to the questionnaire while ensuring that participants completed it independently and without peer collaboration.

To ensure the integrity and authenticity of responses, the questionnaire was administered through Google Forms, and each participant was required to answer individually without peer collaboration. The researcher was present virtually via Zoom during the scheduled data collection to provide clarifications if needed but refrained from influencing participants' responses. Upon completion, all responses were automatically saved in the Google platform and securely accessed by the researcher for data encoding, validation, and analysis.

It was important to note that no students were involved in the data gathering process. All information was drawn solely from the teachers' professional insights, records, and classroom-based reflections concerning their use of play-based learning strategies.

Post-data gathering: Once all responses were collected, the researcher tabulated, encoded, and analyzed the data. All collected information was stored securely and used solely for the purpose of this study. After completion of the research, the data were destroyed to maintain the privacy and confidentiality of the participants.

Data Analysis

The data gathered in this study were analyzed using both descriptive and inferential statistical methods, with the aid of JAMovi, an open-source statistical software suitable for social science research. This platform was selected due to its accessibility, reliability, and user-friendly interface, making it ideal for conducting various statistical procedures without the need for commercial licensing.

Descriptive statistics were used to provide a summary of the participants' demographic profile. Specifically, frequency and percentage were employed to present categorical variables such as age, years of teaching experience, and educational background. To describe the distribution of responses related to the frequency of play-based learning strategies, mean and standard deviation were computed, reflecting the central tendency and variability of the data.

To examine potential relationships among variables, the Pearson Product-Moment Correlation Coefficient (r) was used. This test helped determine the strength and direction of the relationship between teachers' use of play-based learning strategies and two key outcomes: classroom engagement (emotional, cognitive, and behavioral) and learners' academic performance in literacy and numeracy.

Together, these analytical tools allowed the researcher to identify trends in teaching practices and examine the extent to which play-based strategies influenced learner outcomes. This statistical approach ensured that the findings were both evidence-based and meaningful within the context of early childhood education. Additionally, the use of appropriate statistical techniques enhanced the accuracy and reliability of the results, providing a stronger



basis for interpretation. It also enabled the researcher to draw clear conclusions and formulate relevant recommendations for improving instructional practices in early childhood settings.

Ethical Considerations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (World Medical Association, 2013). Ethical approval was obtained from the Research Ethics Committee of the University of the Visayas, with Reference No. 2025-0359, dated February 10, 2025. Since the participants of the study were kindergarten teachers, informed consent was obtained from all participants prior to their participation. They were fully informed about the purpose of the study, the procedures involved, and their rights as research participants. Participation in the study was voluntary, and participants were given the freedom to withdraw at any time without any consequences. Confidentiality and anonymity were strictly maintained by ensuring that the identities of the participants were not disclosed. All data gathered were securely stored and used solely for research purposes. Transparency in the research process was upheld, and all research activities complied with the ethical standards and institutional guidelines of the University of the Visayas.

RESULTS AND DISCUSSION

This section presents, interprets, and analyzes the data gathered to examine the use of play-based learning strategies and their influence on the class engagement and performance of kindergarten learners in the Mandaue City Kindergarten North District for School Year 2025–2026. The findings are organized according to the specific research questions and are discussed in relation to early childhood education practices and developmentally appropriate instruction. Through this analysis, this section aims to provide a clearer understanding of how play-based approaches support meaningful participation and learning outcomes among young learners.

Demographic Profile of the Participants

The demographic profile of the kindergarten teacher-participants included their age, years of teaching experience in kindergarten, and highest educational attainment. This information provided context for interpreting the findings related to play-based learning strategies, classroom engagement, and learner performance.

Table 1.

Demographic Profile of Kindergarten Teachers

Profile Variable	Category	Frequency (f)	Percentage (%)
Age in years	Mean Age	38.25	—
	26–35	23	41.82
	36–45	23	41.82
	46–52	9	16.36
Years of Teaching Experience	Mean Experience	9.18	—
	1–5	13	23.64
	6–10	15	27.27
	11–15	20	36.36
	16–18	7	12.73
Highest Educational Attainment	Bachelor's Degree	12	21.82
	Master's Units	30	54.55
	Master's Degree	13	23.64



TOTAL	55	100%	n=55
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The demographic profile of the respondents showed that the kindergarten teachers involved in the study were generally experienced and academically advancing professionals. The average age of the respondents was 38.25 years, indicating that most participants were within their productive teaching years. A large proportion belonged to the young adult and middle adult categories, suggesting a balance between emerging and seasoned educators who are likely open to innovative instructional approaches such as play-based learning.

In terms of teaching experience, respondents had an average of 9.18 years in kindergarten teaching, with the majority having between 11 to 15 years of service. This implies that many participants possess substantial classroom exposure, which may influence how play-based strategies are implemented and perceived in relation to learner engagement and performance.

Regarding educational attainment, more than half of the respondents had earned master's units, while a notable number had already completed a master's degree. This reflects a strong commitment to professional development among kindergarten teachers, which may positively contribute to their understanding and application of developmentally appropriate and play-based pedagogies aligned with early childhood education principles.

Teachers' Usage of Play-Based Teaching Strategies

The level of teachers' usage of play-based teaching strategies was analyzed to determine how role-playing, games, and manipulatives are consistently integrated into kindergarten instruction. These strategies reflect developmentally appropriate practices that support active participation and meaningful learning experiences among young learners. Examining the frequency of implementation provides a clearer picture of how teachers translate play into purposeful teaching approaches that enhance engagement and academic development. The succeeding table presents the mean scores and corresponding interpretations describing the extent of play-based instructional practices among the respondents. Furthermore, the analysis highlights the consistency with which these strategies are applied across different classroom contexts. It also provides insights into which play-based approaches are most frequently utilized by teachers in supporting learner engagement. These findings serve as a basis for strengthening instructional practices and promoting the effective use of play in early childhood education.

Table 2

Teachers' Usage of Play-Based Teaching Strategies

Indicators	Mean	SD	Interpretation
Role Playing			
1. I provide opportunities for children to engage in dramatic play (e.g., playing 'market,' 'hospital,' or 'school').	4.29	0.737	Always
2. I integrate storytelling and role-play in lessons to enhance understanding and expressive communication.	4.62	0.527	Always
3. I encourage learners to create their own characters and act out real-life or imagined situations.	4.53	0.604	Always
4. I observe children naturally engaging in role-play during free play and support their narratives.	4.62	0.527	Always
Average	4.51	0.482	Always
Games			
1. I use cooperative games (e.g., musical chairs, Simon Says) to develop listening, turn-taking, and following rules.	4.53	0.690	Always



2. I play games involving numbers and counting to enhance early math skills.	4.71	0.567	Always
3. I include rhyming games, sound matching, and name games to promote phonemic awareness.	4.65	0.584	Always
4. I use games to practice routines (e.g., clean-up race, color hunt) and promote responsibility and independence.	4.64	0.557	Always
Average	4.51	0.429	Always
Manipulatives			
1. I use puzzles, pattern blocks, and building toys to improve problem-solving and critical thinking.	4.47	0.663	Always
2. I provide tactile activities using clay, sand, and water to support sensory development and creativity.	4.40	0.735	Always
3. I provide sorting, matching, and grouping tasks using objects like buttons, counters, or bottle caps.	4.65	0.552	Always
4. I engage children with math manipulatives (e.g., counting rods, number cards) in playful, guided activities.	4.67	0.610	Always
Average	4.54	0.480	Always

Legend 1.00-1.80= *Never* | 1.81-2.60 = *Rarely*; 2.61- 3.40 = *Sometimes*; 3.41-4.20 = *Often* ; 4.21-5.00 = *Always*

It is evident in Table 2 that teachers consistently utilized play-based teaching strategies in their classrooms, with high mean scores across all indicators for role-playing, games, and manipulatives. The extreme values for each dimension reflect the high level of integration of these strategies in teaching practices. For role-playing, the extreme score of 4.62 indicates that teachers always integrate storytelling and role-play in lessons to enhance understanding and expressive communication. In games, the extreme score of 4.71 signifies that teachers always use games involving numbers and counting to enhance early math skills. Finally, in manipulatives, the extreme score of 4.67 suggests that teachers always engage children with math manipulatives in playful, guided activities.

The implications of these findings were significant as they highlight the importance of play-based teaching strategies in promoting student engagement, learning, and development in early childhood education. Play-based approaches have been shown to enhance children's cognitive, social, emotional, and physical skills (Isenberg & Jalongo, 2017). By incorporating role-playing, games, and manipulatives into their lessons, teachers can create a dynamic and interactive learning environment that fosters creativity, problem-solving, and collaboration among students.

Recent studies also emphasized the benefits of play-based teaching strategies in early childhood education. For example, a study by Hirvonen, Multisilta, and Suominen (2019) found that incorporating games and digital manipulatives in teaching mathematics improved student motivation and engagement. Additionally, research by Ramani, Muldoon, and Stevens (2018) highlighted the effectiveness of using play-based strategies in promoting early math skills among young children.

The consistent use of play-based teaching strategies by teachers, as evidenced by the high mean scores in the table, underscores the importance of incorporating playful and interactive activities in early childhood education. By embracing these strategies, educators can create enriching learning experiences that support the holistic development of young learners.

Learners Level of Attention Span and Participation

Building on the findings that teachers consistently utilized play-based teaching strategies, it is essential to examine how these instructional practices translate into observable learner outcomes. The level of learners' attention span



and participation in class activities was analyzed to determine how play-based experiences influence engagement, focus, and interaction among kindergarten pupils. These indicators captured learners' sustained interest, collaboration, and active involvement during play-oriented classroom tasks, providing a clearer picture of how purposeful play supports meaningful learning. The succeeding table presents the mean scores and interpretations describing the learners' level of attention span and participation as perceived by the teacher-respondents.

On The other hand, the use of play-based strategies creates a stimulating learning environment that encourages learners to remain attentive and actively participate in classroom activities. Through interactive and meaningful play experiences, learners are more likely to express their ideas, collaborate with peers, and stay engaged for longer periods. This highlights the role of play in promoting both cognitive and social development among young learners. It also suggests that learners become more confident in participating when activities are enjoyable and relevant to their interests. Moreover, structured and guided play allows teachers to maintain focus while still giving learners the freedom to explore. As a result, play-based learning contributes to a more dynamic, responsive, and engaging classroom environment. In addition, the varied nature of play activities helps sustain learners' attention by reducing monotony and increasing curiosity. Teachers are also able to observe individual differences in participation, allowing for more responsive and differentiated instruction.

Table 3

The Learners Level of Attention Span and Participation in Class activities

Indicators	Mean	SD	Interpretation
Attention Span			
1. Children stay focused longer when they are engaged in hands-on play activities.	4.78	0.459	Always
2. Play-based activities help reduce restlessness and maintain children's interest.	4.78	0.459	Always
3. I observe improved task persistence during open-ended play (e.g., building, drawing, pretend cooking).	4.58	0.599	Always
4. Children demonstrate curiosity and sustained interest when play materials are varied and meaningful.	4.73	0.489	Always
5. I allow time for quiet, focused play (e.g., puzzles, drawing, storytelling), which improves attention.	4.62	0.527	Always
Average	4.70	0.435	Always
Participation			
2. Play encourages shy or hesitant learners to express themselves more freely.	4.62	0.561	Always
3. Children initiate conversations and interactions more during imaginative or pretend play.	4.65	0.552	Always
4. Participation increases when learners have freedom to choose play centers or activities.	4.78	0.417	Always
5. I see more collaboration and teamwork when learners play games or build together.	4.82	0.389	Always
Average	4.72	0.412	Always

Legend 1.00-1.80= Never | 1.81-2.60 = Rarely; 2.61- 3.40 = Sometimes; 3.41-4.20 = Often; 4.21-5.00 = Always

Table 3 revealed that the learners' level of attention span and participation in class activities is consistently high, with mean scores indicating that students always exhibit strong focus and active engagement in play-based activities.



In terms of attention span, the extreme value of 4.78 for indicators 1 and 2 suggests that children stay focused longer and that play-based activities help reduce restlessness and maintain interest. The high mean score of 4.70 for overall attention span highlights the effectiveness of hands-on, varied, and meaningful play activities in improving task persistence and sustained interest among students.

Regarding participation, the extreme values in the table also indicated a high level of engagement and interaction among learners. Indicator 4 has an extreme score of 4.78, signifying that participation increases when students have the freedom to choose play centers or activities. Additionally, indicator 5 showed an extreme score of 4.82, indicating more collaboration and teamwork among learners during games or group activities. The overall mean score of 4.72 for participation underscores the positive impact of play in promoting active involvement, self-expression, and social interaction among students.

Learners Literacy and Numeracy Skills

Following the findings that learners demonstrated high levels of attention span and active participation during play-based activities, it becomes important to examine how these engagement behaviors translate into academic skill development. The learners' literacy and numeracy skills were assessed to determine the extent to which play-based learning experiences support foundational competencies in language and mathematics. These indicators reflect observable early learning outcomes such as vocabulary development, phonological awareness, number sense, and problem-solving skills within playful and interactive classroom contexts. The succeeding table presents the mean scores and interpretations describing the learners' level of literacy and numeracy skills as perceived by the teacher-respondents.

Furthermore, active engagement in play-based activities provides learners with meaningful opportunities to practice language and mathematical concepts in a natural and enjoyable way. Through storytelling, songs, and role-playing, learners are able to enhance their vocabulary and develop phonological awareness as they interact with words and sounds. Similarly, games involving counting, sorting, and matching help strengthen learners' number sense and basic mathematical understanding. These experiences allow learners to connect abstract concepts with real-life situations, making learning more meaningful and easier to understand. In addition, play-based tasks encourage learners to think critically and solve problems as they explore different ways to complete activities. The collaborative nature of play also promotes communication skills, as learners express their ideas and negotiate roles with peers. Teachers are able to guide these interactions by providing appropriate scaffolding to support both literacy and numeracy development. Moreover, consistent exposure to structured play activities helps reinforce previously learned concepts while introducing new skills in a gradual and engaging manner.

Table 4

The Learners Literacy and Numeracy Skills

Indicators	Mean	SD	Interpretation
Literacy			
1. Learners has improved vocabulary and oral expression.	4.60	0.564	Always
2. Learners; earn new words and sentence structures through role-play and storytelling.	4.62	0.527	Always
3. Learners can chant rhymes, songs, and improves enhance phonological awareness.	4.76	0.470	Always
4. Learners can recognize letters and improves through games, songs, and interactive writing tasks.	4.87	0.336	Always



5. Learners can make connections between spoken and written words during play (e.g., labeling a pretend menu or sign).	4.64	0.557	Always
Average	4.70	0.388	Outstanding
Numeracy			
1. Learners understand numbers and quantities through counting games and manipulatives	4.84	0.373	Always
2. Children can do sequencing and patterns through play (e.g., making bead necklaces, lining up blocks).	4.56	0.631	Always
3. Learners can do basic addition and subtraction using concrete materials during play.	4.73	0.489	Always
Indicators	Mean	SD	Interpretation
4. Learners understand Math-related vocabulary (e.g., more, less, bigger, equal) as often reinforced through daily activities.	4.71	0.497	Always
5. Learners solve simple problems in real-life play scenarios (e.g., shopping, cooking, building).	4.71	0.497	Always
Average	4.71	0.390	Outstanding

Legend 1.00-1.80= *never*; 1.81-2.60 = *rarely*; 2.61- 3.40 = *Sometimes*; 3.41-4.20 = *Often*; 4.21-5.00 = *Always*

The data in Table 4 showed that learners displayed consistently high levels of literacy and numeracy skills, with all indicators falling within the “*Always*” performance range. In terms of literacy, learners frequently demonstrated improvement in vocabulary and oral expression ($M = 4.60$, $SD = 0.564$), acquired new words and sentence structures through role-play and storytelling ($M = 4.62$, $SD = 0.527$), effectively chanted rhymes and songs which enhanced phonological awareness ($M = 4.76$, $SD = 0.470$), and recognized letters effectively through learning games and interactive writing ($M = 4.87$, $SD = 0.336$). Additionally, they showed strong ability to connect spoken and written words in play-based contexts ($M = 4.64$, $SD = 0.557$). Collectively, the literacy indicators produced a high average ($M = 4.70$, $SD = 0.388$), suggesting that learners are proficient in early literacy skills.

In terms of numeracy, learners reliably understood numbers and quantities using counting games and concrete materials ($M = 4.84$, $SD = 0.373$), demonstrated sequencing and pattern recognition ($M = 4.56$, $SD = 0.631$), performed basic arithmetic operations like addition and subtraction with manipulatives ($M = 4.73$, $SD = 0.489$), and understood math-related vocabulary reinforced through daily activities ($M = 4.71$, $SD = 0.497$). They also solved simple real-life numeracy problems in play scenarios ($M = 4.71$, $SD = 0.497$), yielding a very high numeracy average ($M = 4.71$, $SD = 0.390$). Overall, these findings indicate that learners are not only exposed to literacy and numeracy concepts but also consistently demonstrate competence in both domains.

The consistently high means across all literacy and numeracy indicators imply that play-based and interactive learning strategies are effective in developing foundational cognitive skills in young learners. Specifically, literacy skills, such as vocabulary, oral expression, phonological awareness, letter recognition, and connecting spoken to written language, are strengthened through meaningful and engaging activities such as storytelling, rhymes, and interactive games. Numeracy skills, including number sense, sequencing, arithmetic, and mathematical vocabulary, are enhanced when learners engage in hands-on, play-centered tasks that allow them to explore and solve problems in real life contexts.

These results suggest that learners are learning actively and with high engagement, supporting the idea that child-centered, play-based instructional approaches promote both literacy and numeracy outcomes simultaneously.



Students' Literacy and Numeracy Skills

Learners' literacy and numeracy performance were examined using their first and third quarter examination results to determine changes in academic achievement. The following table presents the mean scores, standard deviations, and performance remarks for students' outcomes across the two-grading period.

Table 5

Students' Literacy and Numeracy Skills (First and Third Quarter Examinations)

Subject Area	Quarter Exam	Mean	SD	Remarks
Literacy Skills	1 st Quarter	80.6	7.20	Approaching Mastery
	3 rd Quarter	87.5	6.72	Proficient
	Average	84.1	6.08	Approaching Mastery
Numeracy Skills	1 st Quarter	82.7	7.23	Approaching Mastery
	3 rd Quarter	88.5	5.98	Proficient
	Average	85.6	6.03	Proficient

Legend: 90–100= Advanced; 85–89= Proficient; 80–84=Moving Towards Mastery / Approaching Proficiency; 75–79=Developing; Below 75=Beginning

The results in the table showed that students demonstrated growth in both literacy and numeracy skills between the 1st and 3rd quarter examinations. In literacy skills, the mean score increased from 80.6 in the 1st quarter to 87.5 in the 3rd quarter, indicating an improvement in students' ability to read, comprehend, and use language effectively; the approaching mastery literacy score across both quarters was 84.1, with a moderate level of variability (SD = 6.08). Similarly, in numeracy skills, students showed improvement, rising from a mean of 82.7 in the 1st quarter to 88.5 in the 3rd quarter, yielding an overall mean of 85.6 (SD = 6.03). Despite the gains, literacy skills remained within the "approaching mastery" performance category while numeracy is in the proficient level, suggesting that while students are progressing academically, there is still room for enhancement to achieve higher proficiency levels.

The findings align with recent educational research that emphasized continuous assessment and instructional support as key drivers of academic improvement: Oakhill, Cain, & Bryant (2019) explained that ongoing instructional support and formative assessment contribute to stronger literacy development, as they help learners consolidate comprehension and vocabulary skills over time. Georgiou et al. (2020) found that repeated exposure to structured reading and language tasks significantly enhances literacy performance across academic periods. van der Ven et al. (2021) noted that systematic numeracy activities and ongoing feedback are associated with measurable improvements in students' mathematical reasoning and problem-solving scores while Jordan, Kaplan, & Hanich (2022) reported that consistent monitoring of assessment results allows educators to tailor instruction to address skill gaps in both literacy and numeracy, which supports academic growth throughout the school year.

Correlation Matrix of Literacy and Numeracy Skills with Game-Related Strategies

To further understand the relationship between instructional practices and academic outcomes, a correlation analysis was conducted to examine the association between game-related strategies and learners' literacy and numeracy skills. This analysis aimed to determine which play-based approaches significantly contribute to the development of early language and mathematical competencies. The succeeding table presents the correlation coefficients, p-values, and levels of significance describing the relationship between role playing, games, manipulatives, and learners' literacy and numeracy performance.



Table 6

Correlation Matrix of Literacy and Numeracy Skills with Game-Related Strategies

Pair of Variables	r-value	p-value	Decision	Significance
Literacy and ...				
Role Playing	.081	.557	Do not reject Ho	Not Significant
Games	.076	.582	Do not reject Ho	Not Significant
Manipulatives	.284	.039	Reject Ho	Significant
Pair of Variables	r-value	p-value	Decision	Significance
Numeracy and ...				
Role Playing	.078	.596	Do not reject Ho	Not Significant
Games	.273	.047	Reject Ho	Significant
Manipulatives	.296	.028	Reject Ho	Significant

The correlation analysis examined the relationship between game-related strategies and learners' literacy and numeracy skills. The results indicate that role playing and games did not show a statistically significant relationship with literacy skills, as reflected by low correlation coefficients and non-significant p-values ($r = .081$, $p = .557$ for role playing; $r = .076$, $p = .582$ for games). However, manipulatives demonstrated a significant positive relationship with literacy skills ($r = .284$, $p = .039$), suggesting that hands-on learning materials are associated with better literacy outcomes.

In terms of numeracy skills, role playing again showed no significant relationship ($r = .078$, $p = .596$). In contrast, both games ($r = .273$, $p = .047$) and manipulatives ($r = .296$, $p = .028$) were found to have significant positive correlations with numeracy skills. These findings suggest that while not all game-based strategies equally influence learning outcomes, interactive and concrete learning approaches, particularly manipulatives and structured games, are more strongly associated with improved numeracy skills and, to some extent, literacy development.

The results implied that the game-based strategy vary in their effectiveness depending on the type of academic skill being developed. While role playing may support social and emotional learning, it does not appear to have a direct measurable impact on literacy and numeracy performance. On the other hand, the significant correlations between manipulatives and both literacy and numeracy, as well as between games and numeracy, highlight the importance of hands-on and interactive instructional materials in enhancing learners' understanding of abstract concepts. Educators are therefore encouraged to integrate manipulatives and educational games more intentionally into instruction, particularly in mathematics, where concrete representations help learners develop number sense, problem-solving skills, and conceptual understanding.

Recent studies supported the observed relationships between manipulatives, games, and academic skills: Zosh et al. (2022) emphasized that guided play using concrete materials significantly enhances children's cognitive and academic outcomes, particularly in mathematics and early literacy. Ramani and Scalise (2020) found that structured games promote numeracy development by strengthening counting skills, number comparison, and mathematical reasoning. Carboneau, Marley, and Selig (2021) reported that manipulatives improve learning outcomes by making abstract concepts more concrete and accessible, especially in early mathematics instruction. Fleer and Walker (2021) noted that while role play supports language use and social interaction, its academic impact is more indirect compared to hands-on instructional tools.

Correlation Matrix of Literacy and Numeracy Skills with Students Engagement

The relationship between play-based teaching strategies and learners' literacy and numeracy skills was examined using correlation analysis to determine the extent of their association. This analysis aimed to identify which game-related strategies significantly contribute to academic development among kindergarten learners. The following



table presents the correlation coefficients, p-values, and significance levels describing the relationship between role playing, games, manipulatives, and learners' literacy and numeracy outcomes.

Table 7

Correlation Matrix of Literacy and Numeracy Skills with Students Engagement

Pair of Variables	r-value	p-value	Decision	Significance
Literacy and ...				
Attention Span	.691	.001	Reject Ho	Significant
Participation	.781	.001	Reject Ho	Significant
Numeracy and ...				
Attention Span	.681	.001	Reject Ho	Significant
Participation	.859	.001	Reject Ho	Significant

Table 7 presents the correlation between students' engagement, specifically attention span and participation, and their literacy and numeracy skills. The results reveal strong and statistically significant positive relationships between student engagement and both academic domains. Literacy skills showed a strong correlation with attention span ($r = .691$, $p = .001$) and an even stronger correlation with participation ($r = .781$, $p = .001$), indicating that students who are more attentive and actively involved in classroom activities tend to demonstrate higher literacy performance. Similarly, numeracy skills were strongly and positively correlated with attention span ($r = .681$, $p = .001$) and participation ($r = .859$, $p = .001$). All p-values were significant at the 0.01 level, leading to the rejection of the null hypothesis. These findings suggest that increased student engagement is closely associated with improved literacy and numeracy outcomes.

The strong correlations implied that student engagement is a critical factor in academic success, particularly in literacy and numeracy development. Attention span enables learners to process information effectively, while active participation allows them to practice and reinforce skills through interaction and application. The especially high correlation between numeracy and participation suggests that mathematics learning greatly benefits from active involvement, problem-solving, and hands-on activities. These results highlight the need for educators to design engaging, learner-centered instructional strategies that sustain attention and encourage participation, as improving engagement may directly enhance learners' academic performance.

Recent research strongly supported the relationship between student engagement and academic achievement: Fredricks, Wang, Schall Linn, Hofkens, & Sung (2020) emphasized that behavioral engagement, including attention and participation, is a strong predictor of achievement in both reading and mathematics. Bae and DeBusk-Lane (2021) found that students with higher classroom participation and sustained attention demonstrated significantly better literacy and numeracy outcomes. Nguyen et al. (2022) reported that engagement-driven instructional practices improve learners' focus and participation, which in turn leads to higher academic achievement, particularly in mathematics. Skinner, Kindermann, and Furrer (2020) noted that engaged learners are more persistent, attentive, and willing to participate, resulting in improved academic skill development.

Correlation Matrix of Game-Related Strategies and Students Engagement

The relationship between game-related strategies and students' engagement was further examined through correlation analysis, focusing on attention span and participation during classroom activities. This analysis aimed to determine which play-based approaches are significantly associated with sustaining learners' focus and encouraging active involvement. The succeeding table presents the correlation coefficients, p-values, and significance levels describing the relationship between role playing, games, manipulatives, and students' engagement indicators. Furthermore, the analysis provides evidence on which specific strategies yield stronger associations with learners' sustained attention and participation. It also allows the identification of the most effective play-based practices that teachers can prioritize in classroom implementation.



The results serve as a basis for understanding how different forms of play contribute uniquely to engagement outcomes. In addition, the findings help guide instructional decisions by highlighting which strategies are statistically significant in promoting active learning behaviors. Ultimately, this analysis supports the integration of evidence-based play strategies to enhance learner engagement in early childhood classrooms.

Table 8

Correlation Matrix of Game-Related Strategies and Students Engagement

Pair of Variables	r-value	p-value	Decision	Significance
Attention Span and ...				
Role Playing	.430	.001	Reject Ho	Significant
Games	.248	.068	Do not reject Ho	Not Significant
Manipulatives	.443	.001	Reject Ho	Significant
Participation and ...				
Role Playing	.532	.001	Reject Ho	Significant
Games	.379	.004	Reject Ho	Significant
Manipulatives	.548	.001	Reject Ho	Significant

The correlation matrix examined the relationship between game-related strategies and students' engagement, specifically attention span and participation. The findings indicate that role playing has a moderate and statistically significant positive relationship with students' attention span ($r = .430$, $p = .001$) and participation ($r = .532$, $p = .001$), suggesting that interactive and imaginative activities help sustain learners' focus and encourage active involvement. Manipulatives also demonstrated significant positive correlations with both attention span ($r = .443$, $p = .001$) and participation ($r = .548$, $p = .001$), indicating that hands-on learning materials effectively enhance students' engagement.

In contrast, games showed no significant relationship with attention span ($r = .248$, $p = .068$), although they were significantly correlated with participation ($r = .379$, $p = .004$). Overall, the results led to the rejection of the null hypothesis in most variable pairs, except for games and attention span. These findings suggest that while not all game-related strategies equally influence engagement, role playing and manipulatives are consistently associated with higher levels of student attention and participation, which are essential components of effective learning.

The results implied that engagement is more strongly influenced by interactive and tactile learning strategies than by games alone. Role playing promotes sustained attention by immersing learners in meaningful contexts, while manipulatives support engagement by allowing students to actively explore concepts through physical interaction. Although games encourage participation, they may not always maintain prolonged attention unless carefully structured. These findings highlight the importance of intentional instructional design, where role playing and manipulatives are integrated into lessons to foster deeper engagement, which in turn supports academic learning in literacy and numeracy.

Recent studies supported the observed relationships between game-based strategies and student engagement: Zosh et al. (2022) emphasized that guided play and hands-on activities significantly enhance children's attention and participation by promoting active involvement in learning tasks. Flee (2021) found that role play supports sustained engagement by encouraging learners to take ownership of their learning through imagination and social interaction. Sung, Chang, and Liu (2020) reported that manipulative-based learning environments increase students' focus and classroom participation, particularly in early education settings. Hassinger-Das et al. (2020) noted that while games can increase participation, their impact on attention depends on the level of guidance and instructional alignment.

Conclusion

This study examined learners' literacy and numeracy skills in relation to game-related strategies and student engagement. The findings revealed that learners consistently demonstrated high levels of literacy and numeracy



skills, particularly when exposed to play-based and interactive learning activities. Results from the quarterly examinations further showed notable improvement in both literacy and numeracy performance from the first to the third quarter, indicating steady academic progress over time.

Correlation analyses revealed that learner engagement, specifically attention span and participation, had strong and significant relationships with both literacy and numeracy skills. This suggests that learners who are more attentive and actively involved in classroom activities tend to perform better academically. In contrast, not all game-related strategies were equally effective. Manipulatives showed a significant relationship with both literacy and numeracy skills, while games were significantly associated only with numeracy. Role playing, although beneficial for engagement, did not show a direct significant relationship with literacy or numeracy performance.

Moreover, the relationship between game-related strategies and student engagement showed that role playing and manipulatives were strongly associated with increased attention span and participation, whereas games mainly influenced participation but not sustained attention. Overall, the findings indicate that engagement serves as a key mechanism through which instructional strategies influence learning outcomes, and that hands-on, interactive approaches are particularly effective in supporting both engagement and academic performance.

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