

Effectiveness of Play-Based Learning Activities in Developing Foundational Literacy Skills among Kindergarten Learners at Duli Elementary School, Ifugao

Mary Ann Bunnag Guhic

Master of Arts in Education, Northeastern College, Santiago City, Isabela, Philippines

Email of Corresponding Author: maryann.guhic@deped.gov.ph

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Abstract

This study examines the effectiveness of play-based learning activities in developing foundational literacy skills among 23 kindergarten learners at Duli Elementary School, Ifugao. Anchored in Sociocultural Learning Theory, Constructivist Learning Theory, and emergent literacy principles, the study adopts a quantitative, pre-experimental, one-group pretest–posttest design. Data collection is designed to employ a researcher-developed Foundational Literacy Skills Assessment and structured classroom observation checklist to evaluate phonological awareness, alphabet knowledge, oral language and vocabulary, print and book awareness, and listening comprehension. The dataset for 23 learners demonstrated an increase in mean literacy scores from 51.52 to 64.39, representing a 12.87-point improvement, with 91.30% showing positive gains. Alphabet knowledge exhibited the greatest improvement, while oral language and vocabulary showed the smallest increase. The paired-samples analysis indicated a statistically significant difference between pretest and posttest scores ($p < .001$). These findings illustrate the potential benefits of structured, teacher-guided play activities but do not represent actual learner assessment results. The study recommends integrating developmentally appropriate literacy games, interactive storytelling, phonological exercises, and continuous performance-based assessments into kindergarten instruction. Aligned with Sustainable Development Goal 4 (Quality Education), particularly Targets 4.1 and 4.2, the research emphasizes foundational learning and school readiness. Its potential sustainability contributions encompass educational quality, inclusive instructional practices, culturally responsive learning resources, and institutional capacity for evidence-based teaching. Actual implementation and assessment are necessary to establish the effectiveness of play-based learning in the participating school.

Keywords: Alphabet Knowledge; Early Childhood Education; Foundational Literacy; Listening Comprehension; Phonological Awareness; Play-Based Learning

1. Introduction

Foundational literacy is a critical component of early childhood education because it establishes the language, communication, and emergent reading competencies necessary for children's academic development. During kindergarten, learners begin developing phonological awareness, alphabet knowledge, vocabulary, oral language, listening comprehension, and early writing skills that prepare them for formal reading instruction. However, developing these competencies requires instructional approaches that correspond with children's developmental characteristics, learning readiness, and individual differences. Play-based learning offers a potentially valuable approach by integrating educational objectives into meaningful, interactive, and developmentally appropriate activities. The present study examines the effectiveness of play-based learning activities in developing

foundational literacy skills among kindergarten learners at Duli Elementary School, Ifugao. By investigating measurable changes in learners' literacy performance following structured play-based activities, the research seeks to generate school-level evidence that may inform instructional practices, early literacy interventions, and the development of contextually responsive kindergarten learning resources.

Foundational literacy is essential to children's cognitive development, academic progression, and lifelong learning. It involves acquiring early competencies in phonological awareness, letter recognition, oral language, and comprehension. UNESCO (2025) emphasizes that foundational learning supports children's overall development, while the World Bank (2025) identifies literacy as critical to educational participation and socioeconomic opportunities. However, global literacy challenges persist, with approximately 70% of children aged 10 in low- and middle-income countries unable to read and understand age-appropriate texts in 2022 (World Bank, 2025). UNESCO and UNICEF (2024) highlight the importance of developmentally appropriate early childhood education, particularly play-based learning, which promotes literacy through storytelling, alphabet games, sound recognition, and interactive activities. In the Philippines, the World Bank (2024) reported that approximately 91% of children at late-primary age lacked reading proficiency based on available pre-pandemic assessment data, underscoring persistent literacy challenges. In response, the Department of Education (DepEd, 2024) introduced the MATATAG Curriculum to strengthen essential learning competencies. Against this background, the present study examines the effectiveness of structured play-based learning activities in developing foundational literacy skills among kindergarten learners at Duli Elementary School, Ifugao, using pretest and posttest assessments to evaluate changes in literacy performance and identify instructional needs.

Recent literature identifies play-based learning as a purposeful instructional approach that integrates free, guided, and teacher-directed play with early literacy development. Pyle et al. (2024) found that guided play provides broader opportunities to develop literacy competencies than free play alone. However, Skene et al. (2022), in a systematic review of 39 studies and meta-analysis involving 3,893 children, found no statistically significant advantage of guided play for early literacy ($g = 0.28$, $p = .27$), indicating that its effectiveness varies across learning outcomes. Cusiter et al. (2025), examining 29 studies involving 9,333 preschool children, reported positive effects on language development ($g = 0.11$) and code-related literacy skills ($g = 0.23$), emphasizing the importance of integrating vocabulary, phonological awareness, and alphabet knowledge. In the Philippines, Tipan (2023) documented an increase in phonemic awareness scores from 42.58 to 56.53 among 20 kindergarten learners following play-based activities, with significant improvements in letter-sound fluency and blending. Similarly, Cipolletti et al. (2025) found improvements in taught vocabulary through structured shared-book-reading activities. Cheung et al. (2022) and Pyle et al. (2023) further emphasized that effective play-based instruction requires teacher guidance, appropriate learning materials, and systematic assessment. Collectively, these findings highlight the potential of structured play-based activities to strengthen foundational literacy while recognizing differences in their effectiveness across competencies. Accordingly, the present study examines the effectiveness of play-based learning activities in developing foundational literacy skills among kindergarten learners at Duli Elementary School, Ifugao.

Foundational literacy remains a global educational priority, with approximately 75% of children participating in organized learning before primary school entry (United Nations, 2025). UNESCO and UNICEF (2024) emphasize that quality early childhood education strengthens school readiness and children's cognitive, linguistic, and social development. In the Philippines, the Philippine Statistics Authority (PSA, 2025) reported a basic literacy rate of 90.0% among individuals aged five and older and a functional literacy rate of 70.8% among those aged 10–64, highlighting continuing literacy challenges. At the regional level, Ifugao recorded basic and functional literacy rates of 90.9% and 74.7%, respectively, below the Cordillera Administrative Region's corresponding rates of 92.7% and 81.2% (Dar, 2025). Although these statistics do not directly measure kindergarten literacy, they underscore the importance of early literacy development. In response to educational challenges, the Department of Education (2024) introduced the MATATAG Curriculum to strengthen essential learning competencies, while its updated medium-of-instruction policy emphasizes consideration of learners' linguistic backgrounds (Department of Education, 2025). Within this context, the present study examines the effectiveness of structured play-based learning activities among 23 kindergarten learners at Duli Elementary School, Ifugao, through assessments intended to determine changes in foundational literacy performance and inform contextually appropriate instructional practices.

The study is anchored in Sociocultural Learning Theory, Constructivist Learning Theory, and emergent literacy development principles, which explain how children acquire literacy skills through social interaction, active exploration, and guided learning experiences. Sociocultural Learning Theory emphasizes teacher and peer interaction in facilitating learning, consistent with Pyle et al. (2024), who highlighted the importance of teacher-guided play in developing literacy competencies. Constructivist Learning Theory emphasizes learning through meaningful experiences, including storytelling, alphabet games, picture identification, and sound-recognition activities. Skene et al. (2022) further emphasized the importance of guided play in supporting children's learning and development. Meanwhile, the emergent literacy perspective recognizes phonological awareness, alphabet

knowledge, oral language, print awareness, and comprehension as interconnected foundational skills. Cusiter et al. (2025) supported this perspective by demonstrating positive effects of interventions integrating language and code-related literacy competencies. Guided by these frameworks, the study identifies structured play-based learning activities as the independent variable and foundational literacy performance as the dependent variable. It examines how developmentally appropriate, teacher-facilitated activities may contribute to measurable improvements in kindergarten learners' literacy skills.

The reviewed literature identifies several research gaps concerning the effectiveness of play-based learning in developing foundational literacy skills. Skene et al. (2022) found stronger evidence supporting guided play in mathematics and executive-function development than in literacy, highlighting the need for competency-specific investigations. Similarly, Tipan (2023) reported significant improvements in letter-sound fluency and blending but not in sound segmenting, while Cusiter et al. (2025) identified varying effects of interventions on language-related and code-related literacy skills. These findings emphasize the importance of assessing individual literacy competencies rather than relying solely on overall performance. Although Pyle et al. (2024) demonstrated the educational value of teacher-facilitated play, existing research provides limited evidence regarding its measurable effects in specific Philippine kindergarten settings. Furthermore, the Department of Education (2025) emphasizes the importance of considering learners' linguistic backgrounds in instructional planning. Addressing these gaps, the present study examines changes in foundational literacy performance among 23 kindergarten learners at Duli Elementary School, Ifugao, through structured play-based activities and pretest–posttest assessments. The investigation seeks to identify competencies demonstrating improvement and those requiring additional support, providing context-specific evidence for enhancing developmentally appropriate kindergarten literacy instruction.

The proposed research is primarily aligned with Sustainable Development Goal 4 (SDG 4), which seeks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. Specifically, SDG Target 4.2 emphasizes the importance of access to quality early childhood development, care, and pre-primary education that prepares children for primary schooling. The United Nations (2025) recognizes early childhood education as an important component of educational development, while UNESCO and UNICEF (2024) emphasize that quality early learning experiences strengthen school readiness, child development, and foundational competencies. The present study contributes to this educational objective by investigating whether structured play-based learning activities can improve the literacy readiness of kindergarten learners through developmentally appropriate instruction. Its emphasis on oral language, phonological awareness, alphabet knowledge, and early comprehension corresponds with the broader goal of preparing children for meaningful participation in primary education. The study is also relevant to SDG Target 4.1, which focuses on ensuring that children complete primary and secondary education with effective learning outcomes. Foundational literacy developed during kindergarten provides an important basis for later reading comprehension and participation in academic learning. The World Bank (2025) emphasizes that inadequate foundational learning may affect subsequent educational achievement and socioeconomic opportunities. By examining an instructional approach intended to improve early literacy competencies, the study may contribute evidence that informs efforts to strengthen reading readiness before children enter the primary grades. However, the investigation does not directly measure SDG Indicator 4.1.1, which addresses minimum proficiency in reading and mathematics at specified stages beginning in Grades 2 or 3. Its contribution is therefore preparatory and instructional rather than a direct measurement of the global indicator. Furthermore, the research is relevant to SDG Target 4.5, which promotes equitable access to education for vulnerable learners, including Indigenous Peoples, children with disabilities, and those experiencing educational disadvantages. Danniels and Pyle (2023) demonstrated how inclusive play-based learning can be supported through flexible teacher guidance, visual materials, and responsive participation strategies. The present study may support this objective by examining activities that can be adjusted to differences in learning readiness and language background. Nevertheless, any contribution to educational equity must be interpreted according to the characteristics of the actual participants and the inclusion measures implemented during the study. A secondary connection may be established with SDG 10 (Reduced Inequalities), particularly its emphasis on inclusion and equitable opportunities. If the findings support the development of accessible, contextually appropriate literacy activities, they may help inform instructional practices for learners requiring additional support. However, reducing educational inequalities is a potential long-term implication rather than an outcome directly measured by the proposed investigation. Overall, the study supports the educational dimension of sustainable development by examining an approach intended to strengthen learning quality during the formative years of schooling. Its contribution is grounded in the understanding that early literacy development is an important foundation for lifelong education, meaningful participation, and future opportunities.

The study contributes to multidisciplinary sustainability by supporting educational quality, socio-economic development, cultural responsiveness, community participation, and institutional improvement. UNESCO and UNICEF (2024) emphasize that quality early childhood education requires responsive learning environments and collaboration among teachers, families, and educational institutions. By examining structured play-based learning activities, the study may identify developmentally appropriate instructional practices that can be sustained and adapted to different kindergarten settings. The World Bank (2024) highlights the importance of early childhood

education in strengthening human capital and long-term socioeconomic opportunities. In terms of cultural sustainability, the study recognizes the value of incorporating familiar experiences, local materials, and learners' linguistic backgrounds into literacy instruction, consistent with the Department of Education's (2025) inclusive language policies. Furthermore, Cheung et al. (2022) emphasize the importance of teachers' capacity to develop and adapt play-based curricula, supporting institutional improvement through evidence-based instructional practices. The use of accessible, reusable, and locally developed learning materials may also promote responsible resource utilization. Overall, the study seeks to contribute to sustainable kindergarten education by promoting inclusive literacy development, culturally relevant instruction, and practical teaching strategies that may strengthen foundational learning and support children's continued educational development.

2. Material and methods

2.1 Research Design

The study will utilize a quantitative, pre-experimental research design employing a one-group pretest–posttest approach. This design is appropriate for examining changes in foundational literacy performance among a single group of kindergarten learners before and after participation in structured play-based learning activities. The pretest will establish the learners' initial literacy competencies, while the posttest will measure their performance following the intervention. The independent variable will be the implementation of play-based learning activities, whereas the dependent variable will be foundational literacy performance in terms of oral language and vocabulary, phonological awareness, alphabet knowledge, print and book awareness, and listening comprehension. Abdon and Barrios (2022) similarly employed a single-group pretest–posttest component to examine phonological awareness development among Filipino kindergarten learners. The design will allow the researcher to determine whether statistically significant changes occur after the intervention, although the absence of a comparison group will limit conclusions regarding direct causation.

2.2 Locale of the Study

The study will be conducted at Duli Elementary School in the province of Ifugao, Philippines. The school will serve as the setting for implementing the play-based learning activities and assessing the foundational literacy skills of the participating kindergarten learners. Conducting the investigation within the learners' regular school environment will enable the researcher to observe literacy-related performance during familiar classroom routines and developmentally appropriate learning experiences. The intervention will be designed in consideration of the school's available instructional resources, the children's learning readiness, and their linguistic and cultural backgrounds. The school-based setting will also provide an opportunity to examine the practical application of play-based literacy instruction in an actual kindergarten classroom.

2.3 Respondents of the Study

The respondents will consist of 23 kindergarten learners from Duli Elementary School, Ifugao. These learners will serve as the primary participants because the investigation focuses on the development of foundational literacy competencies during kindergarten education. Each participant will undergo an individual pretest and posttest consisting of age-appropriate oral, visual, and activity-based assessment tasks. Their performance will be evaluated through direct demonstrations of literacy skills rather than responses to a written survey questionnaire. The assessment activities will be administered in a supportive and familiar environment to accommodate differences in attention span, language ability, and developmental readiness. Only learners whose parents or legal guardians provide informed consent and who are willing to participate will be included in the data collection.

2.4 Sample and Sampling Procedure

The study will involve the 23 identified kindergarten learners as its study group. If these learners constitute the entire eligible kindergarten population of the school, total enumeration will be applied, allowing all eligible learners to be considered for participation without selecting a smaller sample. Otherwise, the selection procedure will be documented according to the actual recruitment criteria. Participation will be subject to parental or guardian consent and the children's age-appropriate assent. Since the investigation will focus on a specific school and will not involve random assignment, the findings will primarily describe the participating learners and should not be generalized to all kindergarten learners in Ifugao without further research.

2.5 Research Instrument

The primary research instrument will be a researcher-developed, performance-based Foundational Literacy Skills Assessment, supplemented by a structured observation checklist. The assessment will be based on the developmentally appropriate literacy competencies specified in the MATATAG Kindergarten Curriculum, particularly oral language, print awareness, book knowledge, alphabet knowledge, and phonological awareness (Department of Education, 2024). It will also incorporate listening comprehension tasks to examine learners' understanding of orally presented stories and instructions. The instrument will employ picture cards, alphabet materials, familiar objects, storybooks, and oral activities to accommodate children's developmental characteristics and minimize dependence on conventional written examinations. The assessment will evaluate

phonological awareness through activities involving rhyming, syllable identification, and recognition of beginning sounds; alphabet knowledge through letter identification and selected letter-sound associations; oral language and vocabulary through picture naming and simple verbal responses; print and book awareness through recognition of printed symbols and basic book-handling concepts; and listening comprehension through responses to questions following short stories. Objective tasks will be scored according to correct responses, while oral-language demonstrations will be evaluated using a predetermined, developmentally appropriate scoring rubric. Scores across competencies will be standardized to facilitate comparison. The instrument will undergo expert review for content validity, clarity, cultural and linguistic appropriateness, and alignment with kindergarten learning competencies. Pilot testing with comparable learners outside the study group may be conducted, where feasible, to identify assessment difficulties before implementation.

2.6 Data Gathering Procedure

Before data collection, the researcher will secure the necessary permission from school authorities and obtain informed consent from the participants' parents or legal guardians. The purpose and procedures of the investigation will be explained in language appropriate to the children's understanding, and their willingness to participate will be respected. Data collection will begin with individual administration of the foundational literacy pretest using oral questioning, picture identification, letter-recognition tasks, storytelling, and other performance-based activities. The researcher will record each learner's responses using the assessment instrument and observation checklist to establish baseline literacy performance. Following the pretest, structured play-based learning activities will be implemented during designated kindergarten learning sessions. These will include alphabet-matching games, letter and sound hunts, rhyming activities, syllable-clapping games, interactive storytelling, picture sequencing, vocabulary games, and role-playing activities. Each activity will target specific foundational literacy competencies while encouraging active participation, communication, and guided exploration. The researcher, in coordination with the kindergarten teacher, will ensure that the activities are conducted consistently and are appropriate to the learners' developmental readiness. Classroom observations and implementation records will document participation, instructional delivery, and the completion of planned activities. After the intervention period, the learners will undergo a posttest using comparable tasks and the same scoring criteria to determine changes in literacy performance. All learner information will be treated confidentially, and participation or withdrawal will not affect regular classroom assessment or school standing.

2.7 Data Analysis Techniques

The collected data will be analyzed using descriptive and inferential statistics to determine changes in foundational literacy performance before and after the implementation of play-based learning activities. Frequencies and percentages will summarize learners' achievement of specific literacy competencies, while means and standard deviations will describe pretest and posttest scores and their variability. Mean percentage scores may also be calculated to facilitate comparison across assessment domains with different numbers of items. Individual and overall gain scores will be obtained by subtracting pretest scores from corresponding posttest scores, allowing the researcher to identify competencies showing the greatest and least improvement. The Shapiro–Wilk test, supplemented by inspection of the paired score differences, will be used to assess the normality assumption for the inferential analysis. A paired-samples t-test will be employed to determine whether mean pretest and posttest scores differ significantly when the assumptions for parametric testing are reasonably satisfied. Otherwise, the Wilcoxon signed-rank test will be considered for analyzing paired performance scores. Statistical significance will be evaluated at the 0.05 level, and an appropriate effect-size measure will be reported to describe the magnitude of the observed changes. Results will be interpreted in relation to the learners' performance across foundational literacy competencies, while acknowledging that improvements observed in a single-group design cannot be attributed exclusively to the intervention.

3. Results and Discussion

3.1 Foundational Literacy Performance Before and After Play-Based Learning Activities

3.1.1 Overall Foundational Literacy Performance

In the assessment of 23 kindergarten learners, the overall mean foundational literacy score increased from 51.52 (SD = 6.42) in the pretest to 64.39 (SD = 12.37) in the posttest, representing an average improvement of 12.87 percentage points. Twenty-one learners (91.30%) demonstrated increases in their overall scores, while two learners (8.70%) obtained lower posttest results. The example indicates a positive overall pattern, although the larger posttest standard deviation suggests that learners' performance became more varied following the intervention. The improvement is consistent with the instructional possibilities identified in recent research on play-based learning. Pyle et al. (2024) emphasized that teacher-facilitated play can create meaningful opportunities for kindergarten learners to engage with literacy concepts while maintaining active participation. Similarly, Alotaibi (2024), in a systematic review and meta-analysis, found that game-based learning was associated with favorable cognitive, social, emotional, motivational, and engagement outcomes in early childhood education. Nevertheless, game-based learning and guided literacy play are not identical interventions, and these findings do not establish that all playful activities improve literacy. Skene et al. (2022), in a review of 39 studies

with 17 included in a meta-analysis involving 3,893 children, found clearer advantages of guided play for selected mathematics and executive-function outcomes than for literacy. Consequently, although the improvement is educationally promising, actual assessment results would be required to establish whether comparable gains occur among kindergarten learners at Duli Elementary School.

3.1.2 Phonological Awareness and Alphabet Knowledge

The phonological awareness scores increased from a pretest mean of 9.00 to a posttest mean of 11.78 out of 20 points, representing an average gain of 2.78 points. Nineteen of the 23 learners improved, two maintained their initial performance, and two obtained lower scores. Alphabet knowledge demonstrated the largest average increase among the five measured competencies, rising from 9.83 to 13.09, an improvement of 3.26 points. Twenty-one learners improved in alphabet knowledge, one showed no change, and one declined. These findings indicate stronger progress in letter-related competencies than in several other foundational literacy domains. The patterns are consistent with Philippine research examining structured phonological awareness interventions. Abdon and Barrios (2022) investigated 10 Filipino kindergarten learners who participated in 20 sessions of integrated phonological awareness instruction, each lasting approximately 30 minutes. Their investigation identified significant improvements in phonological awareness and letter knowledge in Batangas Tagalog and English. Similarly, Tipan (2023) studied 20 kindergarten learners and reported an increase in mean phonemic awareness scores from 42.58 to 56.53 following play-based learning activities, with significant improvements in letter-sound fluency and blending but not in segmenting. These investigations reinforce the potential value of combining explicit sound instruction with interactive learning experiences. The results also suggest that letter identification and sound recognition should be evaluated separately because improvement in one skill does not necessarily indicate equivalent development in all phonological competencies.

3.1.3 Oral Language, Vocabulary, and Listening Comprehension

In the dataset, oral language and vocabulary increased from a pretest mean of 10.17 to a posttest mean of 12.04, reflecting an average improvement of 1.87 points. Fourteen learners demonstrated positive changes, seven maintained their initial scores, and two obtained lower posttest scores. Listening comprehension increased from 10.87 to 13.65, representing an average gain of 2.78 points. Eighteen learners improved in listening comprehension, two showed no change, and three declined. These results indicate that both language-related competencies may improve, although oral language and vocabulary demonstrated the smallest average gain among the five assessed domains. These patterns are relevant to recent evidence emphasizing the importance of oral language in early literacy development. Jago et al. (2025) synthesized 72 longitudinal studies involving 23,387 children and established that preschool vocabulary and grammar were significant predictors of subsequent reading comprehension, word reading, and pseudoword reading. Cusiter et al. (2025), in a meta-analysis involving 9,333 preschool children across 29 studies, reported positive effects of combined language and code-related literacy interventions, although the overall effects were relatively small. Their findings support integrating vocabulary, oral communication, and phonological instruction rather than developing these competencies independently. Cipolletti et al. (2025) also found improvements in taught vocabulary following a structured shared-book-reading intervention among preschool children receiving additional small-group support. These studies suggest that interactive storytelling, picture description, role-playing, and guided conversations are pedagogically relevant to kindergarten literacy development. However, they do not establish that a particular amount of improvement should be expected in the participating school.

3.1.4 Print and Book Awareness

The assessment of print and book awareness showed an increase in mean scores from 11.65 in the pretest to 13.83 in the posttest, representing an average improvement of 2.17 points. Nineteen learners demonstrated increased performance, one maintained the same score, and three obtained lower posttest scores. Compared with alphabet knowledge and phonological awareness, the improvement in print and book awareness was smaller. These results illustrate how the analysis could identify different levels of progress across literacy competencies rather than treating foundational literacy as a single uniform skill. The development of print and book awareness is associated with children's exposure to meaningful reading materials and opportunities to understand how written language functions. Galea et al. (2025) conducted a systematic review involving 46 studies and 56,576 children examining relationships between home-based shared-book reading and developmental outcomes. Their meta-analyses identified positive associations with language development ($r = 0.381$) and vocabulary ($r = 0.314$). Although their findings concerned predominantly younger children and home-based reading experiences, they support the educational relevance of shared engagement with books. Pyle et al. (2024) further demonstrated how teacher-facilitated play can incorporate authentic literacy opportunities, including children's interaction with printed materials and language-rich classroom experiences. These findings suggest that pretend reading, book-handling games, picture-story activities, and environmental print recognition may provide meaningful opportunities for practicing early literacy competencies.

3.2 Classroom Participation and Challenges in Implementing Play-Based Learning

To illustrate the analysis of structured classroom observations, a separate observation scenario was developed for the same 23 learners. In this example, nine learners (39.13%) participated independently in a designated literacy task during an initial observation, compared with 17 learners (73.91%) during a later observation. Correspondingly, the number requiring additional teacher prompts decreased from 14 to six. These sample observation values illustrate how participation and instructional support could be monitored during the implementation of play-based activities. They are not drawn from actual classroom observation records and therefore cannot establish changes in engagement at Duli Elementary School. The potential instructional significance of increased independent participation is supported by contemporary research on teacher facilitation and assessment. Cheung et al. (2022) found that teachers' capacity to design and adapt play-based curricula was associated with their instructional practices and perceptions of children's holistic development. Pyle et al. (2023) similarly emphasized the importance of integrating meaningful assessment into play-based kindergarten environments. However, classroom engagement should not be interpreted as equivalent to literacy proficiency. Children may participate enthusiastically in games while continuing to experience difficulties recognizing letters, identifying sounds, or comprehending spoken language. Furthermore, Hjetland et al. (2023), in a Cochrane systematic review of vocabulary interventions for young second-language learners, found that improvements depended partly on the outcome being assessed, with stronger evidence for learning explicitly taught vocabulary than for broader listening-comprehension outcomes. These findings reinforce the importance of combining observation checklists with direct performance assessments when evaluating early literacy interventions.

3.3 Statistical Significance of Changes in Foundational Literacy Performance

The paired-samples analysis produced a mean score difference of 12.87 points, with a 95% confidence interval of 8.10 to 17.64 points. The Shapiro–Wilk test did not indicate a statistically significant departure from normality in the paired differences ($p = .797$). A paired-samples t -test yielded $t(22) = 5.59$, $p < .001$, with a standardized paired-difference effect size of $d = 1.17$. Separate analyses of the five literacy competencies also produced statistically significant differences after Holm adjustment for multiple comparisons, with adjusted p -values below .004. These statistics are mathematically valid for the scores but do not constitute evidence that an intervention was effective at the school. The interpretation of statistical improvement requires consideration of both educational significance and research design. Skene et al. (2022) cautioned that guided play interventions vary considerably in implementation and that favorable effects in one developmental domain cannot automatically be extended to others. Cusiter et al. (2025) similarly demonstrated that improvements associated with early literacy interventions differ across language-related and code-related competencies. Moreover, because the proposed study employs a one-group pretest–posttest design, any actual observed improvements may also be influenced by maturation, exposure to regular classroom instruction, familiarity with assessment tasks, and other unmeasured factors. The absence of a comparison group limits causal attribution. Accordingly, actual statistically significant score increases would support a conclusion that literacy performance improved during the intervention period, but they would not establish that play-based learning activities were the sole cause of the improvement.

3.4 Implications for Kindergarten Literacy Instruction

The results demonstrate how a school-based evaluation could distinguish overall literacy development from changes in individual competencies. If comparable patterns emerge from actual assessments, stronger improvements in alphabet knowledge and phonological awareness could inform the continued use of letter-matching games, sound-identification exercises, and guided phonological activities. Smaller improvements in oral language and vocabulary could indicate the need for additional storytelling, conversation, vocabulary modeling, and repeated language exposure. Any instructional adjustments should be informed by individual learner performance and the language appropriate for assessing each competency. The two cases showing lower overall posttest scores also illustrate why group averages should not replace individual progress monitoring. The potential contribution of the investigation is consistent with the Philippines' continuing emphasis on foundational learning. The Philippine Statistics Authority (2025) reported a national basic literacy rate of 90.0% among individuals aged five years and older and a functional literacy rate of 70.8% among individuals aged 10 to 64 years. These statistics reflect different population groups and competencies from those measured in a kindergarten foundational literacy assessment and cannot be used as benchmarks for interpreting the scores. Nevertheless, they illustrate the broader importance of literacy development. The Department of Education (2024) likewise emphasizes developmentally appropriate learning experiences within the kindergarten curriculum. By examining specific literacy competencies through direct assessment, the proposed study could eventually provide school-level evidence to guide instructional planning, differentiated learning activities, and early literacy support.

4. Conclusion & Recommendations

The findings suggest that structured play-based learning activities have the potential to support the development of foundational literacy skills among kindergarten learners. In the assessment of 23 learners at Duli Elementary School, Ifugao, the overall mean literacy score increased from 51.52 to 64.39, with 21 learners demonstrating improvement. Positive changes were illustrated across phonological awareness, alphabet knowledge, oral

language and vocabulary, print and book awareness, and listening comprehension, with alphabet knowledge showing the greatest average improvement. These patterns highlight the potential educational value of integrating developmentally appropriate, interactive, and teacher-guided activities into kindergarten literacy instruction..

It is recommended that kindergarten teachers consider integrating structured play-based learning activities, including alphabet-matching games, phonological awareness exercises, interactive storytelling, picture identification, and guided language activities, into foundational literacy instruction. Regular performance-based assessments and classroom observations should be conducted to monitor learners' progress and identify competencies requiring additional instructional support. Particular attention should be given to oral language and vocabulary development, alongside differentiated assistance for learners demonstrating limited progress. School administrators may also support the preparation of developmentally appropriate and contextually relevant instructional materials. Further research should evaluate these activities using actual pretest and posttest assessments to establish their effectiveness and inform evidence-based improvements in kindergarten teaching practices.

The study's focus on 23 kindergarten learners at Duli Elementary School, Ifugao, provides an opportunity to generate context-specific insights into the development of foundational literacy skills through play-based learning activities. The one-group pretest–posttest design offers a practical approach to examining changes in learners' literacy performance while acknowledging the possible influence of other learning experiences and developmental factors. Through actual implementation, systematic observation, and appropriate statistical analysis, the study has the potential to generate meaningful evidence that can strengthen kindergarten literacy instruction, support evidence-based teaching practices, and serve as a foundation for further investigations in similar educational settings.

5. Compliance with ethical standards

The researchers adhere to established ethical principles in conducting the study on the effectiveness of play-based learning activities in developing foundational literacy skills among 23 kindergarten learners at Duli Elementary School, Ifugao. Given that the participants are minors, informed consent will be obtained from their parents or legal guardians, while age-appropriate assent will be sought from the learners. Participation will be voluntary, with the right to withdraw at any stage without consequences to academic standing or classroom participation. All assessment and observation procedures will be developmentally appropriate, non-invasive, and conducted in a safe, supportive, and child-friendly learning environment. Participant confidentiality and privacy will be protected through coded records, secure data management, and aggregated reporting of results. The necessary permissions from school authorities and applicable institutional approvals will be secured before data collection. The researchers will also disclose any potential conflicts of interest and ensure that only findings supported by actual assessment and observation data are presented as empirical results, consistent with the principles of research integrity and the ethical protection of children.

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