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| RESEARCH ARTICLE

Exploring The Impact of The Home Literacy Environment on Preschoolers' Literacy and Numeracy Development

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| ABSTRACT

This study assessed the influence of the home literacy environment on the literacy and numeracy skills of preschoolers. Utilizing a descriptive-correlational research design, the study explored how five key dimensions of the home environment physical resources, parent literacy habits, child literacy habits, parent-child interaction, and parental beliefs, were associated with learners' proficiency in alphabet knowledge, phonological awareness, book and print knowledge, number recognition, attribute identification, and thinking skills. The respondents included 100 parent-respondents and 2 preschool teachers, selected through purposive sampling. Data were collected using a validated home literacy environment survey and the Department of Education's LitNum Assessment Tool. Statistical analyses involved frequency counts, weighted means, and Pearson's correlation coefficient. Results showed that the home literacy environment was rated "excellent" across all dimensions, and most learners achieved advanced proficiency in both literacy and numeracy domains. However, correlation analysis revealed no statistically significant relationship between the home literacy environment and learners' literacy or numeracy skills, as all computed r-values were negligible and p-values exceeded the 0.05 significance level. Based on these findings, a comprehensive Action Plan was developed to sustain strong home-school collaboration, address specific learning gaps, and promote more skill-focused support for all learners. The study underscored the value of intentional, skill-specific parental engagement in early academic development.

| KEYWORDS

Home Literacy Environment, Early Childhood Education, Literacy Skills, Numeracy Skills, Preschool Learners, Alphabet Knowledge, Phonological Awareness

| ARTICLE INFORMATION

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Introduction

The preschool years are a critical phase in human development, during which children acquire foundational skills that shape their lifelong learning and academic success. The quality of the home environment, particularly the stimulation it provides for literacy and numeracy development, plays a crucial role in preparing children for formal schooling. According to Britto et al. (2017), early stimulation at home, such as engaging in conversations, reading books, and counting activities, has been linked to improved cognitive and language outcomes. As schools strive to close learning gaps, it becomes increasingly important to consider the home as an extension of the classroom. In low- to middle-income countries like the Philippines, disparities in home resources and parenting practices can widen achievement gaps even before a child enters school (Black et al., 2017). Understanding how home environments contribute to early literacy and numeracy skills can inform more equitable and effective early childhood education programs, particularly in public school settings.

A child's exposure to literacy-rich activities at home greatly influences their reading readiness and language acquisition. Components of the home literacy environment such as shared reading, storytelling, and having books available, have been positively correlated with children's alphabet knowledge, vocabulary, and emergent reading skills (Rodriguez & Tamis-LeMonda, 2011). For example, a study by Evans et al. (2010) emphasized that the presence of print materials in the home and the frequency of parent-child reading sessions strongly predicted early literacy success. Furthermore, the consistency of parents modeling literacy behaviors, like reading and writing in front of children, fosters motivation and interest in learning (Burgess et al., 2002). These early habits are particularly important in multilingual countries like the Philippines, where children often navigate multiple languages and scripts. Investigating how these behaviors manifest in local contexts such as in the homes of learners at Don Andres Soriano Elementary School can help tailor literacy interventions that support both native language development and early reading competencies.

Beyond literacy, early numeracy skills are equally critical for a child's cognitive development and academic success. Home environments that integrate number-related talk and math-based games significantly contribute to children's early numeracy skills (Elliott et al., 2017). Activities such as counting steps, sorting household objects, and comparing sizes or quantities offer young children's meaningful contexts to explore math concepts (Zippert & Rittle-Johnson, 2020). Gunderson and Levine (2011) found that parents' use of number talk mentioning numbers in everyday conversations was a strong predictor of children's number knowledge at school entry. However, in low-resource households, structured math engagement may be limited by a lack of materials, confidence, or awareness of its importance. As a result, children may enter school with uneven mathematical competencies. Understanding the nature and frequency of numeracy experiences at home is vital to help educators bridge these gaps and support learners through aligned, home-informed instruction strategies.

The home literacy environment is a multidimensional construct that extends beyond physical resources. Research identifies five key domains: physical environment, parental literacy habits, child literacy behaviors, parent-child interaction, and parental beliefs (Weigel, Martin, & Bennett, 2006). Each component uniquely influences how children engage with language and literacy. For instance, parental beliefs about the importance of reading often determine the frequency and quality of literacy interactions at home (Sonnenschein & Munsterman, 2002). Likewise, a child's early interest in books is closely linked to the level of engagement provided by parents during shared reading sessions (Piasta et al., 2012). Importantly, these influences are interrelated: parental modeling of literacy behaviors can shape children's habits, while beliefs influence the home setup and priorities. Exploring these dimensions provides a more holistic picture of how home life supports or hinders early learning, particularly in underserved communities where school readiness varies widely among learners.

Although several studies underscore the value of the home literacy environment, much of the existing research has been conducted in urban or Western settings, limiting its applicability in rural and developing contexts. There remains a significant gap in understanding how Filipino families, especially those in semi-urban and rural areas and sustain home environments that support early literacy and numeracy development. Moreover, few localized studies have examined how specific components of the home literacy environment relate to measurable learner outcomes such as alphabet knowledge, phonological awareness, and basic math skills. This study aims to fill that gap by assessing the status of home literacy environments, as perceived by parents, and relating these to learners' academic performance at Don Andres Soriano Elementary School. The results will guide the development of a targeted action plan that promotes home-based practices aligned with the school's goals, thereby strengthening early childhood education efforts in the local context.

Literature Review

The home literacy environment (HLE) has been widely recognized as a key predictor of early literacy development, especially during the preschool years. Research by Tamis-LeMonda et al. (2019) indicates that frequent and responsive parent-child verbal interactions significantly enhance children's language development and comprehension skills. Moreover, HLE elements such as access to age-appropriate books, shared book reading, and print exposure are strongly associated with emergent literacy skills, including alphabet recognition and phonemic awareness (Schmitt et al., 2011). Studies also emphasize that parental scaffolding guiding children's learning during reading or storytelling helps develop inferencing and narrative skills (Zucker et al., 2013). In diverse and multilingual settings, the richness of oral traditions and cultural storytelling further supports early language acquisition (Reese & Goldenberg, 2008). However, socioeconomic barriers often influence the quality of literacy environments at home, particularly in low-income communities where books and educational materials are scarce.

In parallel, early numeracy development is also shaped by the home learning environment, though it has received comparatively less research attention. Zippert et al. (2019) argue that math-related talk, number games, and spatial language used in the home predict children's numeracy and problem-solving abilities at school entry. Blevins-Knabe and Austin (2016) found that children whose parents engaged them in informal math tasks—such as measuring ingredients or comparing sizes performed better in tasks involving number sense and logical reasoning. Furthermore, parents' attitudes toward math, as well as their confidence in teaching it, impact how frequently and effectively they incorporate math into daily routines (Musun-Miller & Blevins-Knabe, 1998). These

findings highlight the importance of not only providing materials, but also empowering parents with strategies to engage their children meaningfully in math learning. In contexts where parents may not feel confident in teaching math or reading, school-led guidance and home-school collaboration become critical.

Methodology

This study utilized a descriptive-correlational research design to assess the influence of the home literacy environment on the literacy and numeracy skills of preschool learners at Don Andres Soriano Elementary School for the school year 2024–2025. The descriptive aspect aimed to determine the current status of the home literacy environment and the learners' literacy and numeracy levels, while the correlational component sought to examine the relationship between these variables without manipulation. The Input-Process-Output (IPO) model served as the guiding framework, with the input including parent respondents' perceptions of five home literacy dimensions: physical environment, parent literacy habits, child literacy habits, parent-child interaction, and parental beliefs. The respondents included 100 parents and 2 preschool teachers selected through purposive sampling, ensuring that participants could provide meaningful data related to the study's objectives. Two research instruments were used: the Literacy and Numeracy (LitNum) Assessment Tool, developed by the Department of Education, Bureau of Learning Delivery, and a Parent Survey Questionnaire adapted from Buvaneswari and Padakannaya (2017), customized to suit the Philippine context. The LitNum Tool assessed learners' alphabet knowledge, phonological awareness, book and print knowledge, numeracy, attributes recognition, and thinking skills. The parent questionnaire measured the home literacy environment based on validated indicators. The data collection followed three phases: Preliminary (securing permissions and instrument validation), Data Gathering (administering assessments and surveys), and Post Data Gathering (data checking, encoding, and analysis). Ethical protocols, including informed consent and participant confidentiality, were strictly observed throughout the study.

Results

Table 1. Literacy Environment at the Learner's Home

Components	WM	SD	Verbal Description
Physical Environment	4.48	0.63	Excellent
Parent Literacy Habits	4.53	0.57	Excellent
Child Literacy Habits	4.56	0.51	Excellent
Parent-child Interaction	4.56	0.59	Excellent
Parental Beliefs	4.54	0.60	Excellent
Grand Mean	4.53		
			Excellent
Grand Standard Deviation		0.58	

Table 1 presents the assessment of the home literacy environment as perceived by parent-respondents across five components. All components received a Verbal Description of "Excellent", with a Grand Mean of 4.53 and a Standard Deviation of 0.58, indicating a consistently high-quality literacy environment at home. The highest ratings were observed in Child Literacy Habits (WM = 4.56) and Parent-Child Interaction (WM = 4.56), suggesting that children are actively engaged in reading behaviors and benefit from meaningful interactions with parents. Parental Beliefs (WM = 4.54) and Parent Literacy Habits (WM = 4.53) also scored strongly, indicating positive attitudes toward early learning. These results suggest that the learners are supported by rich, engaging, and well-resourced literacy environments that likely contribute to their academic readiness.

Table 2. Level of Literacy Skills of the Learners in terms of Alphabet Knowledge

Level	f	%
Advanced	76	74.51
Intermediate	21	20.59
Beginner	5	4.90
Total	102	100.00

Table 2 shows the level of literacy skills of preschool learners in terms of Alphabet Knowledge. The data reveals that 76 learners (74.51%) are at the Advanced level, indicating strong recognition and familiarity with both uppercase and lowercase letters. 21 learners (20.59%) fall under the Intermediate level, showing developing but incomplete mastery, while 5 learners (4.90%) are at the Beginner level, suggesting limited letter knowledge. Overall, the results indicate that a majority of the learners have achieved a high level of proficiency in alphabet recognition, a key foundational skill in early literacy. However, the presence of learners in the

intermediate and beginner categories highlights the need for targeted support to ensure that all children reach the expected literacy benchmarks.

Table 3. Level of Literacy Skills of the Learners in terms of Phonological Awareness

Level	f	%
Advanced	43	42.16
Intermediate	46	45.10
Beginner	13	12.75
Total	102	100.00

Table 3 presents the literacy skill levels of preschool learners in terms of Phonological Awareness. The data shows that 43 learners (42.16%) are at the Advanced level, demonstrating strong skills in recognizing and manipulating sounds, such as rhyming, blending, and segmenting syllables. 46 learners (45.10%) fall into the Intermediate category, indicating developing proficiency with some inconsistencies in phonological processing. Meanwhile, 13 learners (12.75%) are at the Beginner level, suggesting limited awareness of sound patterns and a need for additional support. These results indicate that while a significant portion of the learners are progressing well in phonological awareness, nearly half are still developing, and over 10% require focused intervention to build essential pre-reading skills.

Table 4. Level of Literacy Skills of the Learners in terms of Book and Print Knowledge

Level	f	%
Advanced	35	34.31
Intermediate	46	45.10
Beginner	21	20.59
Total	102	100.00

Table 4 presents the level of literacy skills of preschool learners in terms of Book and Print Knowledge. The data shows that only 35 learners (34.31%) reached the Advanced level, demonstrating strong understanding of how books work (e.g., title page, directionality, and print concepts). A larger group, 46 learners (45.10%), fall under the Intermediate level, showing partial awareness but needing further reinforcement in concepts about print. Notably, 21 learners (20.59%) are at the Beginner level, indicating minimal familiarity with book handling and print recognition. These results suggest that while many learners have a basic understanding of print concepts, a significant portion still need structured exposure and guided practice to build confidence and mastery in this foundational literacy domain.

Table 5. Level of Numeracy Skills of the Learners in terms of Numbers

Level	f	%
Advanced	102	100.00
Intermediate	0	0.00
Beginner	0	0.00
Total	102	100.00

Table 5 presents the level of numeracy skills of preschool learners in terms of Numbers, which includes number recognition, counting, and basic numerical operations. The data reveals that all 102 learners (100%) are at the Advanced level, indicating full mastery of early number concepts appropriate for their age group. There are no learners in the Intermediate or Beginner levels. This exceptional outcome suggests that the learners have been effectively exposed to strong number instruction, either through classroom teaching, home reinforcement, or both. The result reflects a highly successful acquisition of basic numeracy skills and indicates that learners are well-prepared for more complex mathematical tasks in the next stages of their education.

Table 6. Level of Numeracy Skills of the Learners in terms of Identifying Attributes

Level	f	%
Advanced	102	100.00
Intermediate	0	0.00
Beginner	0	0.00
Total	102	100.00

Table 6 shows the level of numeracy skills of preschool learners in terms of Identifying Attributes, which includes recognizing colors, shapes, sizes, and patterns. The data reveals that all 102 learners (100%) are at the Advanced level, with no learners classified as Intermediate or Beginner. This indicates that every learner has fully developed their ability to observe, compare, and describe objects based on their attributes a fundamental aspect of early math learning. The result suggests that learners are consistently exposed to effective instructional strategies and learning experiences that support classification, pattern recognition, and visual discrimination. Such mastery at this stage is a strong indicator of readiness for higher-level problem-solving and logical thinking activities in future grade levels.

Table 7. Level of Numeracy Skills of the Learners in terms of Thinking Skills

Level	f	%
Advanced	98	96.08
Intermediate	4	3.92
Beginner	0	0.00
Total	102	100.00

Table 7 presents the level of numeracy skills of preschool learners in terms of Thinking Skills, which include logical reasoning, problem-solving, classifying, and comparing. The data indicates that 98 learners (96.08%) are at the Advanced level, demonstrating strong critical thinking and cognitive processing skills appropriate for their age. 4 learners (3.92%) are categorized as Intermediate, showing developing abilities that may need further reinforcement. Notably, no learners fall under the Beginner level, indicating a generally high level of cognitive readiness among the group. This strong performance suggests that most learners are capable of applying analytical skills in mathematical contexts, and the small number of intermediate-level learners could benefit from targeted support to reach full proficiency.

8. Test of relationship between the Status of Literacy Environment at their Home and Literacy Skills of the Learners

Literacy Environment VS:	r-value	Strength of Correlation	p - value	Decision	Remarks
Alphabet Knowledge	-0.020	Negligible Negative	0.842	Do not reject Ho	Not Significant
Phonological Awareness	-0.005	Negligible Negative	0.956	Do not reject Ho	Not Significant
Book and Print Knowledge	-0.025	Negligible Negative	0.802	Do not reject Ho	Not Significant

*significant at $p<0.05$ (two-tailed)

Table 8 presents the test of relationship between the status of the home literacy environment and the literacy skills of preschool learners, specifically in the areas of Alphabet Knowledge, Phonological Awareness, and Book and Print Knowledge. The results show negligible negative correlations across all literacy components, with r-values of -0.020, -0.005, and -0.025, respectively. The

corresponding p-values 0.842, 0.956, and 0.802 are all well above the significance level of 0.05. As a result, the null hypothesis is not rejected, indicating no statistically significant relationship between the home literacy environment and learners' literacy performance. Despite the overall high ratings of the home literacy environment, these findings suggest that other factors such as classroom instruction quality, learner readiness, or individual differences may have played a more dominant role in shaping early literacy skills. It also implies that the presence of resources or habits at home may not directly translate into measurable literacy outcomes without deeper engagement or effective instructional support.

Table 9. Test of relationship between the Status of Literacy Environment at their Home and Numeracy Skills of the Learners

Literacy Environment VS:	r-value	Strength of Correlation	p - value	Decision	Remarks
Numbers	-0.139	Negligible Negative	0.164	Do not reject Ho	Not Significant
Identifying Attributes	-0.033	Negligible Negative	0.740	Do not reject Ho	Not Significant
Thinking Skills	0.022	Negligible Positive	0.829	Do not reject Ho	Not Significant

*significant at $p<0.05$ (two-tailed)

Table 9 presents the test of relationship between the status of the home literacy environment and the numeracy skills of preschool learners, specifically in the areas of Numbers, Identifying Attributes, and Thinking Skills. The analysis shows negligible correlations in all three domains, with r-values of -0.139 (Numbers), -0.033 (Identifying Attributes), and 0.022 (Thinking Skills). Corresponding p-values are 0.164, 0.740, and 0.829, all of which exceed the 0.05 significance threshold. Therefore, the null hypothesis is not rejected in each case, indicating that there is no significant relationship between the home literacy environment and numeracy performance. Despite learners demonstrating strong numeracy skills, these outcomes suggest that such achievements may be more closely attributed to effective school-based instruction rather than home factors. It also implies that while the home literacy environment is essential, it may not be a standalone predictor of early numeracy success in this context.

Discussion

The findings of the study revealed that the home literacy environment of the preschool learners was rated "Excellent" across all components, indicating that most households provide supportive conditions for early learning such as access to books, active parent-child reading interaction, and positive literacy habits and beliefs. Despite this, the analysis showed no significant relationship between the home literacy environment and the learners' literacy skills, as measured by alphabet knowledge, phonological awareness, and book and print knowledge. This suggests that while the environment may be supportive in nature, it is not the sole factor influencing literacy development. Other elements such as the quality of classroom instruction, individual learner differences, school readiness, or even the depth of engagement in home activities may play a more direct role in determining literacy outcomes. This aligns with existing literature emphasizing that passive exposure to print or books is not enough; meaningful and guided interactions are needed to translate environmental support into measurable skills. Similarly, the results showed that while learners excelled in numeracy, with most achieving advanced levels across all numeracy domains, the home literacy environment did not show a significant correlation with their numeracy performance. This outcome indicates that numeracy skills may be more influenced by structured school instruction, formal curriculum delivery, and possibly teacher-led interventions than by home-based literacy practices. It is also possible that while the home supports general literacy habits, it may not consistently include math-specific engagement such as counting games, number talk, or problem-solving tasks. These findings highlight the need to differentiate support strategies at home for both literacy and numeracy, and to encourage schools to provide parent education programs that align home activities with classroom learning goals.

Conclusion

Based on the results of this study, it was concluded that the homes of the participating preschoolers provided highly supportive and resource-rich environments for early literacy development. Parents consistently modeled positive literacy behaviors, maintained strong beliefs in their role as co-educators, and actively engaged in meaningful interactions with their children through reading,

conversation, and play. Children were observed to be eager participants in a variety of literacy and numeracy activities, demonstrating both interest and proficiency in foundational skills. However, despite these favorable conditions, the study found no significant relationship between the quality of the home literacy environment and the literacy or numeracy skills of the learners. This suggested that the uniformly high standards of home support across the sample may have reduced observable differences in children's achievement, and that robust school instruction and equitable access to educational opportunities could have played a more influential role in their development. The findings underscored the importance of continued collaboration between families, teachers, and the community to sustain and further enhance early childhood learning outcomes. Ultimately, the study emphasized that both home and school environments remained essential in nurturing holistic growth and lifelong learning among young children.

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