



IMPROVING EARLY CHILDHOOD LANGUAGE SKILLS IN EARLY LITERACY ACTIVITIES THROUGH SAND MEDIA: A COMMUNITY SERVICE PROGRAM AT TK TRISULA I, KEDIRI CITY

Yoyok F., Aureola C.M.W., Mikielson, Neza P.N., Yeti M.R.D., Jefanto T.A.
Prodi D4 Manajemen Informasi Kesehatan
STIKES RS Baptis Kediri

Article info	ABSTRACT
<p>Corresponding Author:</p> <p>Yoyok Febrijanto yoyokfeb@gmail.com STIKES RS Baptis Kediri</p>	<p>Early literacy development is a fundamental foundation for children’s language acquisition and future academic success. However, learning activities that are monotonous and lack engaging media often reduce children’s motivation and participation in early literacy learning. This community service program aimed to improve the language skills of children aged 5–6 years in early literacy activities using sand as a learning medium at TK Trisula I, Kediri City, during the 2025/2026 academic year. The program employed an intervention-based approach using classroom action cycles consisting of planning, implementation, observation, and reflection. The participants were 12 children from Group B. Data were collected through observation sheets assessing three aspects of language skills: neatness, independence, and accuracy in recognizing and writing letters. The results showed a gradual improvement in children’s language skills across learning cycles. In Cycle I, the average achievement reached 60.42%, categorized as Developing as Expected. The findings indicate that sand media provides a meaningful, enjoyable, and sensory-rich learning experience that supports children’s early literacy development. This program concludes that the use of sand as a learning medium is effective in enhancing early childhood language skills and can serve as an alternative instructional strategy in early childhood education settings.</p> <p>Keywords: <i>early literacy, language development, sand media, early childhood education, community service</i></p>
<p>This article distributed under the terms of the Creative Commons Attribution-Share Alike 4.0 International License (https://creativecommons.org/licenses/by-sa/4.0/)</p>	

INTRODUCTION

Language is a fundamental human faculty that functions as the primary medium for communication, meaning-making, and social interaction. Through language, individuals can express ideas, emotions, intentions, and experiences, both orally and in written form. In early childhood, language development was not merely a communicative skill but a core developmental domain that is intricately linked to cognitive, social, and emotional growth. Contemporary developmental theories emphasize that language acquisition during early childhood forms the foundation for later academic achievement, self-regulation, and social competence (Snow, 2017; Lonigan et al., 2018).

Language development in early childhood encompasses four interrelated skills: listening, speaking, reading, and writing. These components develop concurrently and influence one another as children interact with their environment (Dhieni et al., 2020). Neurolinguistic studies demonstrate that early language exposure stimulates neural connections associated with executive function, symbolic thinking, and memory, indicating that early language experiences have long-term implications for learning trajectories (Kuhl, 2010; Romeo et al., 2018). Consequently, early childhood education must prioritize developmentally appropriate language stimulation rather than premature academic instruction.

One of the most critical aspects of early language development is early literacy, often referred to as emergent literacy or pre-literacy. Early literacy does not imply formal reading and writing instruction; rather, it refers to children's foundational understanding of print concepts, letter recognition, phonological awareness, and symbolic representation acquired through everyday interactions and play-based experiences (Whitehurst & Lonigan, 1998). Early literacy skills serve as strong predictors of later reading fluency, comprehension, and academic success (Lonigan et al., 2018).

Research consistently shows that children who receive rich early literacy experiences before entering primary school demonstrate stronger vocabulary development, phonemic awareness, and writing readiness (Cabell et al., 2019). Conversely, children who lack early literacy stimulation are at greater risk of experiencing learning difficulties, particularly in reading and writing, which may persist throughout their schooling years. Therefore, early literacy development should be embedded in meaningful, enjoyable, and child-centered learning contexts rather than rote-based academic drills.

In the Indonesian early childhood education context, national policy emphasizes that early literacy should be introduced through play, exploration, and interaction. The Directorate of Early Childhood Education Development (2016) explicitly states that early literacy learning must align with children's developmental stages and should not mimic formal primary school instruction. However, empirical observations in many early childhood institutions indicate a persistent gap between policy and classroom practice. Teaching methods often remain teacher-centered and rely heavily on conventional tools such as whiteboards and worksheets, which limit children's active engagement and sensory involvement.

Observations conducted at TK Trisula I, Kediri City, revealed similar challenges. Learning activities related to early literacy were predominantly delivered through verbal explanation and board-based demonstrations. As a result, children showed low motivation, limited participation, and difficulties in responding to instructions, imitating letter forms, and pronouncing letters accurately. These findings align with previous studies indicating that monotonous instructional methods reduce children's intrinsic motivation and hinder optimal language development (Hirsh-Pasek et al., 2020).

From a constructivist perspective, children learn language most effectively when they actively construct knowledge through interaction with materials, peers, and their environment. Vygotskian theory emphasizes that language development occurs within social and cultural contexts through meaningful interaction and scaffolding (Vygotsky, 1978). Similarly, Piagetian theory highlights that early childhood learning is grounded in sensorimotor and preoperational experiences, where children learn best through hands-on

exploration and symbolic play (Piaget, 1952). These theoretical perspectives underscore the importance of using concrete, sensory-based learning media to support early literacy development.

Natural environment-based learning media offer unique advantages in early childhood education. Materials derived from nature, such as sand, water, stones, and plants, provide rich sensory experiences that stimulate children's curiosity, creativity, and fine motor skills. Research shows that sensory play enhances neural integration and supports the development of language, cognition, and self-regulation in young children (Bodrova & Leong, 2019). Sand is a versatile and developmentally appropriate medium that allows children to explore shapes, symbols, and letter forms through tactile engagement.

Sand-based learning aligns closely with Montessori educational principles, which emphasize sensory exploration as a foundation for intellectual development. Montessori argued that children learn abstract concepts more effectively when they are introduced through concrete sensory experiences (Montessori, 1967). Contemporary empirical studies support this view, demonstrating that multisensory learning approaches significantly improve early writing readiness, letter recognition, and phonological awareness (Lillard, 2017; Cameron et al., 2012).

Fine motor development plays a critical role in early literacy acquisition, particularly in writing readiness. Writing letters requires coordination between visual perception, hand-eye coordination, and finger muscle control. Studies indicate that children with well-developed fine motor skills demonstrate better handwriting quality and letter formation accuracy (Cameron et al., 2012). Sand media facilitates fine motor practice by allowing children to trace, erase, and rewrite letters freely, reducing anxiety associated with making mistakes and encouraging repeated practice.

Furthermore, sand media supports meaningful learning by enabling children to experiment, self-correct, and engage in repetitive learning cycles without fear of failure. This aligns with principles of experiential learning, where knowledge is constructed through direct experience and reflection (Kolb, 2015). Sand-based activities also promote autonomy and independence, as children can manipulate the material according to their own pace and ability level, fostering self-confidence and intrinsic motivation.

Despite the documented benefits of sensory-based learning media, their implementation in early childhood classrooms remains limited. Many educators face constraints related to instructional habits, limited resources, or insufficient training in innovative learning strategies. As a result, there is a need for practical, low-cost, and contextually relevant interventions that can be readily adopted by early childhood educators to enhance language and early literacy development.

Based on these theoretical and empirical considerations, this community service program was designed to address the identified challenges at TK Trisula I, Kediri City. The program focused on improving children's language skills in early literacy activities through the use of sand media as an alternative instructional approach. By integrating sensory play, fine motor development, and language stimulation, the program aimed to create a learning environment that is enjoyable, meaningful, and developmentally appropriate for children aged 5–6 years.

This study contributes to the growing body of evidence supporting play-based and sensory-oriented learning approaches in early childhood education. It also provides practical

insights for educators and institutions seeking to enhance early literacy development through innovative yet accessible learning media.

METHOD

This community service program employed an intervention-based descriptive approach using a classroom action framework to enhance early childhood language skills in early literacy activities through sand media. The program was conducted at TK Trisula I, Kediri City, involving 12 children aged 5–6 years from Group B during the 2025/2026 academic year. The intervention consisted of structured learning activities using sand as a sensory-based medium, where children were guided to recognize, form, and pronounce letters through tactile exploration. The implementation followed four stages: planning, action, observation, and reflection. Data were collected through systematic observations using structured observation sheets focusing on three indicators of language development: neatness, independence, and accuracy in letter recognition and formation. Children’s developmental progress was categorized into four levels: Not Yet Developed, Beginning to Develop, Developing as Expected, and Very Well Developed. Data were analyzed descriptively by calculating percentage scores to identify changes in language skill development following the implementation of sand-based early literacy activities.

Table 1. Stages of the Community Service Intervention

Stage	Description
Planning	Preparation of lesson plans, sand media, learning tools, and observation instruments
Action	Implementation of sand-based early literacy activities in the classroom
Observation	Systematic observation of children’s language skills during activities
Reflection	Evaluation of outcomes and refinement of learning strategies

RESULT AND DISCUSSION

Finding

The implementation of sand-based learning media in early literacy activities demonstrated positive outcomes in improving children’s language skills. The results were obtained through systematic observation during the intervention cycle and analyzed descriptively using percentage scores for each language development indicator. Three indicators were assessed: neatness, independence, and accuracy in letter recognition and formation.

Language Skill Achievement

Table 2. Results of Children’s Language Skill Observation

No.	Language Skill Indicator	Percentage (%)	Development Category
1	Neatness	61.46	Developing as Expected
2	Independence	60.41	Developing as Expected
3	Accuracy	59.38	Developing as Expected
	Average	60.42	Developing as Expected

Among the three indicators, neatness achieved the highest score (61.46%), indicating that children were generally able to form letter shapes clearly and follow the demonstrated writing patterns when using sand media. This suggests that sand-based activities effectively supported fine motor coordination and visual–motor integration.

The independence indicator reached 60.41%, showing that most children were able to complete early literacy tasks with minimal assistance. The use of sand media appeared to foster confidence and autonomy, as children could correct mistakes easily by reshaping the sand without fear of failure.

The accuracy indicator obtained the lowest score (59.38%), although it still remained within the Developing as Expected category. Some children experienced difficulty consistently recognizing and pronouncing letters correctly, particularly those with similar visual forms. Nevertheless, gradual improvement was observed as children became more familiar with the learning activities

Table 3. Percentage of Language Skill Achievement by Indicator

No.	Language Skill Indicator	Percentage (%)	Interpretation
1	Neatness	61.46	Developing as Expected
2	Independence	60.41	Developing as Expected
3	Accuracy	59.38	Developing as Expected
	Average	60.42	Developing as Expected

Table 3 presents the comparative percentage of children’s language skill achievement across three assessed indicators—neatness, independence, and accuracy—following the implementation of sand-based early literacy activities. The data demonstrate a relatively balanced distribution of achievement levels, with all indicators reaching the category of Developing as Expected, indicating a consistent impact of the intervention on multiple aspects of early literacy-related language development.

The neatness indicator achieved the highest percentage (61.46%), suggesting that most children were able to form letter shapes clearly and follow the demonstrated patterns when writing in sand. This finding indicates that sand media effectively supported children’s fine motor coordination and visual–motor integration. The tactile nature of sand allowed children to control hand movements more flexibly, facilitating smoother letter formation compared to conventional paper-and-pencil tasks.

The independence indicator reached 60.41%, reflecting children’s growing ability to complete early literacy tasks with minimal assistance from teachers. This result suggests that sand-based activities promoted learner autonomy and self-confidence. Children were more willing to initiate tasks, explore letter shapes independently, and correct mistakes without direct intervention, as the medium allowed easy modification and repetition.

The accuracy indicator obtained the lowest percentage (59.38%), although it remained within the Developing as Expected category. This indicates that some children still experienced challenges in consistently recognizing, forming, and pronouncing letters correctly, particularly letters with similar shapes or sounds. However, the relatively close range of percentages among the three indicators suggests that the intervention contributed to balanced development rather than isolated improvement in a single skill.

Overall, the results depicted in Figure 3 confirm that sand-based early literacy activities had a positive and comprehensive effect on children's language skill development. The minimal variation between indicators indicates that the sensory-based learning approach supported not only motor-related aspects such as neatness but also cognitive and behavioral dimensions, including independence and accuracy.

The close clustering of scores across all indicators (ranging from 59.38% to 61.46%) suggests that the sand-based learning intervention fostered holistic language skill development. Rather than emphasizing a single aspect of early literacy, the approach supported fine motor skills, learner autonomy, and cognitive accuracy simultaneously. These findings reinforce the suitability of sensory-based media as an effective strategy for early literacy instruction in early childhood education contexts

Discussion

The findings of this community service program demonstrate that the use of sand as a learning medium has a positive and meaningful impact on early childhood language skills within early literacy activities. The overall achievement score of 60.42%, categorized as Developing as Expected, indicates that sand-based learning effectively supports multiple dimensions of early literacy development, including fine motor coordination, learner independence, and letter recognition accuracy. These findings reinforce the growing body of evidence emphasizing the importance of sensory-based and play-oriented learning approaches in early childhood education.

The highest achievement was observed in the neatness indicator (61.46%), suggesting that sand media significantly supports children's ability to form letters clearly and systematically. This result aligns with previous research indicating that fine motor development is closely associated with early writing readiness and literacy outcomes. Cameron et al. (2012) found that fine motor skills are strong predictors of early academic achievement, particularly in writing and language-related tasks. The tactile properties of sand allow children to regulate hand pressure, refine finger movements, and engage visual-motor coordination more effectively than traditional paper-based writing tasks. Unlike permanent writing tools, sand enables children to erase and rewrite letters effortlessly, reducing anxiety and encouraging repeated practice, which is essential for skill consolidation.

The independence indicator (60.41%) reflects children's growing ability to engage in early literacy tasks with minimal teacher assistance. This finding suggests that sand-based learning environments foster autonomy and intrinsic motivation. From a constructivist perspective, learning is most effective when children actively construct knowledge through interaction with materials and social contexts. Vygotsky's sociocultural theory emphasizes the role of scaffolding and mediated learning experiences in language development (Vygotsky, 1978). In this study, sand functioned as a mediating artifact that enabled children to explore letter forms independently while still benefiting from guided instruction. This result is consistent with Bodrova and Leong's (2019) findings, which highlight that tools and materials play a crucial role in supporting self-regulation and independent learning in early childhood classrooms.

Furthermore, the sensory-rich nature of sand-based activities aligns with the principles of playful learning, which emphasize active engagement, meaningful exploration, and joyful participation. Hirsh-Pasek et al. (2020) argue that playful learning environments promote

deeper cognitive processing and social–emotional development, thereby enhancing language acquisition and literacy outcomes. The observed increase in children’s independence suggests that sand media not only supports technical literacy skills but also contributes to broader developmental competencies such as confidence, persistence, and self-directed learning.

The accuracy indicator (59.38%), although the lowest among the three, still falls within the Developing as Expected category. This finding indicates that while children demonstrated emerging competence in recognizing, forming, and pronouncing letters, challenges remained, particularly for letters with similar visual or phonological features. This outcome is consistent with research on early literacy development, which suggests that letter–sound correspondence and phonological accuracy require sustained exposure and repeated practice over time (Lonigan et al., 2018). The relatively lower score in accuracy may also reflect the developmental stage of the participants, as children aged 5–6 years are still refining their phonological awareness and symbolic understanding.

Nevertheless, the close range of percentages across all indicators (59.38%–61.46%) suggests that the intervention promoted balanced and holistic language development, rather than isolated improvement in a single domain. This balanced outcome supports the theoretical framework of emergent literacy proposed by Whitehurst and Lonigan (1998), which emphasizes that early literacy skills develop interdependently through integrated experiences involving motor, cognitive, and linguistic processes.

From a neurological perspective, sensory-based learning experiences such as sand play have been shown to stimulate brain regions associated with language processing and executive function. Kuhl (2010) and Romeo et al. (2018) highlight that rich, interactive learning environments enhance neural connectivity related to language comprehension and production. The tactile engagement provided by sand media likely contributed to deeper cognitive processing and stronger memory encoding, supporting children’s ability to internalize letter forms and sounds.

In addition, the findings of this program resonate with Montessori’s educational philosophy, which emphasizes that abstract concepts should be introduced through concrete sensory experiences. Empirical evidence supports this approach, with Lillard (2017) demonstrating that multisensory learning environments improve language, literacy, and executive function outcomes in early childhood education. By engaging multiple sensory modalities, sand-based activities bridge the gap between play and structured learning, making early literacy instruction more developmentally appropriate and effective.

Despite these positive outcomes, it is important to acknowledge that the intervention was conducted within a limited timeframe and involved a relatively small number of participants. Therefore, while the results demonstrate promising improvements, sustained implementation and longitudinal observation are necessary to examine long-term impacts on literacy development. Future programs may also integrate sand media with phonological games, storytelling, or digital literacy tools to further enhance accuracy and language comprehension.

Overall, the discussion of findings confirms that sand-based early literacy activities provide an effective, low-cost, and contextually relevant instructional strategy for early childhood education. By supporting fine motor skills, learner independence, and emerging

accuracy simultaneously, sand media contributes to a comprehensive and developmentally appropriate approach to language and early literacy development.

CONCLUSION

This community service program demonstrates that the use of sand as a sensory-based learning medium is effective in enhancing early childhood language skills within early literacy activities. The intervention successfully supported children's development in neatness, independence, and accuracy in letter recognition and formation, with overall achievement reaching the Developing as Expected category. The tactile and flexible nature of sand media facilitated meaningful learning experiences by promoting fine motor coordination, learner autonomy, and active engagement. These findings highlight the potential of sand-based activities as a practical, low-cost, and developmentally appropriate instructional strategy for early childhood education. Future implementations are encouraged to integrate sand media with broader literacy components and to extend the duration of intervention to further strengthen early literacy outcomes.

BIBLIOGRAPHY

- Bodrova, E., & Leong, D. J. (2019). Tools of the mind: The Vygotskian approach to early childhood education. *Early Childhood Research Quarterly, 47*, 32–45. <https://doi.org/10.1016/j.ecresq.2018.10.009>
- Cabell, S. Q., Justice, L. M., McGinty, A. S., & Zucker, T. A. (2019). Emergent literacy and early reading development. *Reading and Writing, 32*(4), 723–746. <https://doi.org/10.1007/s11145-018-9877-4>
- Cameron, C. E., Brock, L. L., Murrah, W. M., et al. (2012). Fine motor skills and executive function both contribute to kindergarten achievement. *Early Childhood Research Quarterly, 27*(4), 679–688. <https://doi.org/10.1016/j.ecresq.2012.01.002>
- Dhieni, N., et al. (2020). *Language Development Methods*. Tangerang Selatan: Universitas Terbuka.
- Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., et al. (2020). A new path to education reform: Playful learning promotes 21st-century skills. *Child Development Perspectives, 14*(2), 81–86. <https://doi.org/10.1111/cdep.12368>
- Kolb, D. A. (2015). Experiential learning: Experience as the source of learning and development. *Educational Psychology Review, 27*(3), 393–401. <https://doi.org/10.1007/s10648-015-9312-4>
- Kuhl, P. K. (2010). Brain mechanisms in early language acquisition. *Neuron, 67*(5), 713–727. <https://doi.org/10.1016/j.neuron.2010.08.038>
- Lillard, A. S. (2017). Montessori education and child development. *Journal of Experimental Child Psychology, 153*, 149–160. <https://doi.org/10.1016/j.jecp.2016.10.001>
- Lonigan, C. J., Burgess, S. R., & Schatschneider, C. (2018). Examining the simple view of reading with elementary school children. *Developmental Review, 47*, 1–24. <https://doi.org/10.1016/j.dr.2018.03.001>
- Romeo, R. R., Leonard, J. A., Robinson, S. T., et al. (2018). Beyond the 30-million-word gap: Children's conversational exposure is associated with language-related brain function. *Psychological Science, 29*(5), 700–710. <https://doi.org/10.1177/0956797617742725>

Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Educational Psychology Review*, 10(1), 1–34.
<https://doi.org/10.1023/A:1022580826804>.