

The Effect of the PALASTA Game on the Emergent Literacy Skills of Children Aged 4–5 Years in a Kindergarten in Purwakarta

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ABSTRACT

Emergent literacy is an essential foundation for children's language development. However, some children aged 4–5 years at Al-Hikam Kindergarten in Purwakarta still experience difficulties distinguishing the shapes and orientations of letter symbols that share visual similarities. This classroom action research (CAR) employed the Kemmis and McTaggart model to improve children's emergent literacy skills through the implementation of PALASTA, a space-themed educational game. The study involved 10 children from Group A1. Data were collected through observations, tests, and documentation and subsequently analyzed using qualitative and quantitative descriptive techniques. The findings demonstrated improvements across all observed indicators of emergent literacy. The mean emergent literacy achievement increased from 45.63% in the pre-cycle stage to 68.75% in Cycle I. Based on the reflection conducted after Cycle I, the PALASTA game was refined in Cycle II by incorporating alphabet components directly

onto the game board to provide children with visual guidance. Following these modifications, the mean emergent literacy achievement increased to 89.38%, exceeding the predetermined success criterion of 85%. The Normalized Gain (N-Gain) calculation yielded a score of 0.80, which falls within the high category. These findings indicate that implementing the PALASTA game improved the emergent literacy skills of children aged 4–5 years at Al-Hikam Kindergarten in Purwakarta. This study further demonstrates that refining educational media based on reflective evaluation can support emergent literacy learning processes that are more responsive to children's needs.

Introduction

Emergent literacy is one of the essential foundations of early childhood development, playing a crucial role in preparing children for learning at subsequent levels of education. Literacy is not merely associated with the technical skills of reading and writing but also encompasses phonological awareness, letter knowledge, reading fluency, and reading comprehension (Marwany & Kurniawan, 2020). These skills need to be developed from an early age, as they provide the foundation for children to understand various forms of information and participate in learning activities.

The importance of developing literacy from an early age is further supported by the state of national literacy, which continues to require considerable attention. The results of the Programme for International

Student Assessment (PISA) indicate that Indonesian students' reading proficiency remains relatively low compared to that of students in other countries (Solichah et al., 2022). In the 2018 PISA assessment, Indonesia ranked 74th out of 79 countries, with an average reading score of 371. This situation highlights the need for continuous efforts to develop literacy skills, including the provision of appropriate stimulation aligned with children's developmental stages during early childhood.

Among children aged 4–5 years, emergent literacy skills may develop at varying levels of achievement. Some children begin to recognize letters, associate letters with their corresponding sounds, and identify simple words, while others still require assistance in recognizing and distinguishing letter symbols. Ramadani et al. (2015) explain that these differences in abilities are associated with variations in children's readiness and the stimulation they receive during the learning process. Therefore, literacy activities should be designed by considering the individual needs and developmental characteristics of each child.

Based on preliminary observations conducted at Al-Hikam Kindergarten in Purwakarta, several children aged 4–5 years were found to experience difficulties distinguishing letters with similar shapes, such as *b* and *d*, as well as *p* and *q*. The children also demonstrated confusion in identifying the orientation of letter symbols. These findings indicate that children's ability to identify the shapes and orientations of symbols still requires further stimulation. Safitri et al.

(2025) explain that the ability to distinguish the shapes and orientations of symbols is one of the aspects associated with the development of children's emergent literacy skills.

These difficulties are also related to the conditions of the learning environment and the use of instructional media. Observations revealed that the open classroom environment made several children easily distracted during literacy activities. Furthermore, the limited variety of instructional media may restrict children's opportunities to engage actively in recognizing and distinguishing letters. Nurhayani (2025) emphasizes that young children can more readily understand symbols and letters through concrete experiences incorporated into meaningful play activities. Therefore, instructional media are needed that not only introduce letters but also provide children with opportunities to observe, compare, and recognize symbols through play-based activities.

Various previous studies have developed instructional media to support emergent literacy among young children through different approaches. Waheda, Pradana, and Kurniawan (2026) investigated the use of digital letter cards to support letter recognition through technology-based media. Meanwhile, Yunita and Ranggayoni (2026) employed a magnetic board that enabled children to manipulate and match letter symbols directly. Ratno et al. (2026) examined the use of Wordwall as an interactive digital learning medium. The differences among these three types of media lie in the forms of learning interaction they provide. Digital letter cards and Wordwall utilize digital devices to

present learning materials, whereas magnetic boards provide direct hands-on experiences. Despite their different characteristics, these three approaches may serve as alternative strategies for emergent literacy instruction, depending on children's learning objectives and needs.

Based on this comparison, further investigation is needed into the use of thematic game-based instructional media that integrate letter recognition with literacy activities within a single sequence of learning experiences, particularly to help children distinguish symbols with similar shapes and orientations. To address this need, the present study implemented PALASTA, an acronym for *Papan Alam Semesta* (Universe Board), a space-themed educational game designed to support the development of emergent literacy skills among children aged 4–5 years. This medium was used in activities involving letter recognition and matching, letter-sound identification, comprehension of simple words, and practice in writing shapes or symbols according to the planned learning activities. By integrating a universe theme with play-based activities, PALASTA is expected to provide concrete learning experiences and encourage children's active engagement in literacy activities.

The novelty of this study lies in the implementation of PALASTA as an instructional medium for emergent literacy, with particular emphasis on children's ability to distinguish letter symbols with similar shapes and orientations, as well as the refinement of the medium based on the reflections conducted during each cycle of classroom action

research (CAR). Unlike previous studies that focused on the use of particular types of instructional media, the present study examines the process of improving both instructional media and learning activities in response to the needs identified throughout the intervention. Based on the preceding discussion, this study aims to improve the emergent literacy skills of children aged 4–5 years through the implementation of the PALASTA educational game at Al-Hikam Kindergarten in Purwakarta.

Methods

This study was conducted to investigate improvements in the emergent literacy skills of children aged 4–5 years through the implementation of the PALASTA (*Papan Alam Semesta*) educational game at Al-Hikam Kindergarten in Purwakarta. The study employed classroom action research (CAR) based on the Kemmis and McTaggart model, which consists of four stages: planning, action implementation, observation, and reflection. These stages were carried out iteratively across two research cycles until the predetermined success criterion was achieved.

This study focused on children's emergent literacy skills, encompassing their interest in texts and pictures, ability to recognize letter sounds, comprehension of simple words, and ability to write symbols or letters. The participants consisted of 10 children from Group A1, comprising four boys and six girls aged 4–5 years.

Data were collected through observations, tests, documentation,

and anecdotal records during the learning process (Chendah & Aerin, 2026). Observations and tests were employed to obtain data on the development of children's emergent literacy skills in each cycle, while documentation and anecdotal records served as supporting data to strengthen the research findings. The observation instrument was developed based on emergent literacy indicators referring to aspects of language development in early childhood.

The observation instrument was developed based on indicators of emergent literacy skills among children aged 4–5 years, referring to the *Foundation Phase Learning Outcomes* outlined in the document issued by the Agency for Standards, Curriculum, and Educational Assessment (BSKAP, 2025), particularly those related to language and literacy development. The observed indicators included children's interest in pictures, ability to recognize letter sounds, comprehension of the meanings of simple words, and ability to write shapes or symbols. Children's interest in pictures was assessed by observing their attention and responses when viewing pictures presented through the instructional media. Their ability to recognize letter sounds was assessed by observing their ability to articulate letter sounds and associate them with the corresponding symbols. Comprehension of simple word meanings was assessed through children's ability to recognize words and associate them with objects or pictures representing their meanings. Meanwhile, the ability to write shapes or symbols was assessed by observing children's ability to imitate or

produce letter shapes according to their developmental stages. These four indicators were used to provide an overview of children's emergent literacy skills during the implementation of the PALASTA educational game. The observation results were subsequently used to assess the development of children's emergent literacy skills and served as the basis for reflection and improvement of learning activities in each research cycle.

The collected data were analyzed using quantitative and qualitative descriptive techniques. Quantitative analysis was conducted by calculating the percentage of children's emergent literacy achievement in each cycle, as well as the Normalized Gain (N-Gain) score, to determine the extent of improvement in emergent literacy skills following the implementation of the PALASTA educational game. Meanwhile, qualitative analysis was employed to describe the action implementation process and changes in children's emergent literacy skills throughout the learning activities.

Result and Discussions

The observation results revealed a consistent improvement across all aspects of emergent literacy among children aged 4–5 years when comparing their initial performance during the pre-intervention stage with their final achievement in Cycle II. Before the intervention, the children's overall literacy achievement was relatively low, with a mean score of 45.625%, categorized as *Beginning to Develop*. An indicator-based analysis at this initial stage revealed that phonetic awareness,

particularly the recognition of letter sounds, was the most challenging aspect, achieving only 37.50%. Meanwhile, the indicator of children's visual motivation, reflected in their interest in pictures and textual forms, recorded the highest achievement at 53.00%, although this result had not yet met the expected mastery criterion.

Table 1. Observation Results of Emergent Literacy Skills among Children Aged 4–5 Years Across Research Cycles

No.	Indicators	Pre-Cycle	Cycle I	Cycle II
1	Children demonstrate interest in pictures.	53%	67.5%	85%
2	Children are able to recognize letter sounds (phonetics) or begin combining several letter sounds.	37.5%	47.5%	83%
3	Children are able to understand the meanings of simple words.	45%	77.5%	95%
4	Children are able to write shapes or symbols.	47.5%	82.5%	95%
	Mean	45.625%	68.75%	89.375%

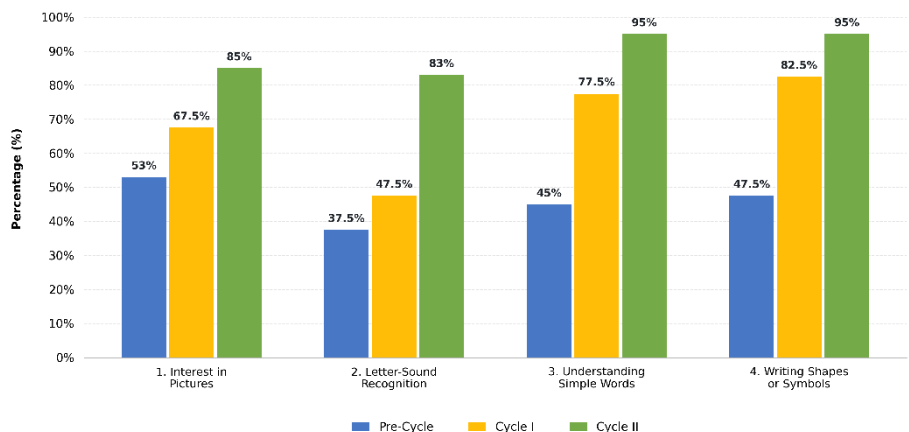


Figure 1. Mean Achievement at Each Research Stage

The conditions observed during the pre-intervention stage indicated that children's emergent literacy development remained considerably limited. This low initial performance was strongly influenced by conventional teacher-centered instructional methods and the monotonous use of paper-based worksheets, which caused children to become easily bored and passive during learning activities. Specifically, the phonetic awareness indicator recorded the lowest achievement at 37.50%, indicating that children experienced substantial difficulties associating the visual forms of letters with their corresponding sounds. These initial challenges are closely related to Piaget's theory of cognitive development, which suggests that children aged 4–5 years are in the preoperational stage. At this stage, their thinking processes depend on concrete objects that can be directly observed and manipulated, making abstract verbal instruction difficult

for them to comprehend.

In Cycle I, children's emergent literacy skills improved, reaching a mean achievement of 68.75%. The most notable improvements were observed in the indicators related to understanding the meanings of simple words and writing letter shapes or symbols. Nevertheless, the indicators concerning children's interest in texts and pictures, as well as their ability to recognize letter sounds (phonetics), remained within the moderate category, indicating that further instructional interventions were still necessary.

More substantial improvement occurred in Cycle II, during which the mean achievement reached 89.375%, thereby meeting the predetermined research success criterion of 85%. All indicators demonstrated significant improvements, although the letter-sound recognition indicator (phonetics) remained the lowest compared with the other indicators.

The intervention in Cycle I was implemented through the PALASTA (*Papan Alam Semesta*) educational game to improve the emergent literacy skills of children aged 4–5 years. The learning activities were designed progressively, beginning with an introduction to the game rules, followed by the presentation of pictures displayed on the PALASTA board, and concluding with group-based game activities in which children matched magnetic letters according to the audio and visual instructions provided.

Children's abilities improved compared with their performance

during the pre-cycle stage. The mean achievement across emergent literacy indicators increased from 45.625% in the pre-intervention stage to 68.75% in Cycle I. This improvement was reflected in children's increased ability to understand the meanings of simple words and write letter symbols more accurately, as well as their greater willingness to participate actively in learning activities.

However, the results of Cycle I had not yet achieved the predetermined success criterion of 85%. Several children continued to experience difficulties recognizing letter sounds (phonetics) and maintaining consistent attention when participating in activities in front of the class.

Table 2. Improvement in Emergent Literacy Skills among Children
Aged 4–5 Years

Stage Comparison	N-Gain	Category
Pre-Cycle – Cycle I	0.42	Moderate
Cycle I – Cycle II	0.71	High

The improvements observed in Cycle I indicated that the PALASTA game was capable of increasing children's engagement in learning activities. The reflection results revealed several challenges encountered during implementation, including children's ongoing adaptation to the game rules, limited playing time, and variations in concentration levels among the children. Some children also tended to remain passive and simply wait for instructions from the teacher. Therefore, improvements in the intervention were necessary for Cycle II, including providing

more intensive demonstrations of letter-sound recognition, increasing opportunities for each child to match letters, and offering positive reinforcement to enhance children's attention and self-confidence.

The intervention in Cycle II was implemented by refining the instructional strategies based on the reflection results from Cycle I. Improvements to the instructional medium involved modifying the game procedures by incorporating a complete set of alphabet letters directly onto the PALASTA board. Whereas children had experienced visual disorientation during the previous cycle, the addition of magnetic alphabet letters systematically arranged on the board served as a concrete visual reference. This modification enabled young children to independently associate graphic symbols with their corresponding phonetic sounds, thereby substantially minimizing the risk of placing letters in reversed positions or incorrect spatial orientations. This adaptive measure proved successful in restoring children's attention and improving learning effectiveness to an optimal level by the end of Cycle II.

The observation results in Cycle II demonstrated a substantial improvement. The mean achievement across children's emergent literacy indicators increased to 89.375%, successfully exceeding the predetermined research success criterion of 85%. The children demonstrated greater interest, recognized letter sounds, and wrote symbols more accurately. They also exhibited a high degree of independence when constructing words during classroom activities.

The success achieved in Cycle II indicates that the PALASTA game effectively improved young children's emergent literacy skills. The children were not only able to recognize letters but also to use them independently in constructing simple words. The improvements in children's attention and self-confidence during Cycle II further suggest that game-based learning can create a safe and supportive learning environment.

The gradual improvement in literacy skills from the pre-intervention stage to Cycle II provides strong empirical support for Emergent Literacy Theory, pioneered by Marie Clay. Marie Clay (Muthmainnah et al., 2025) emphasizes that children actively and progressively construct their understanding of written language through print-rich environments before mastering formal reading and writing skills. Consistent with this perspective, Shipley and McAfee (2025) note that emergent literacy readiness develops through the accumulation of meaningful everyday experiences involving texts, sounds, and spoken language. By facilitating four comprehensive activities—exploring pictures of celestial objects, matching magnetic letters with their corresponding sounds, classifying words, and writing letter symbols—the PALASTA educational game fully aligns with this literacy framework.

Furthermore, the success of this intervention is consistent with the national educational standards outlined in the *Foundation Phase Learning Outcomes Guidelines* issued by the Agency for Standards, Curriculum,

and Educational Assessment, which emphasize that children in the foundation phase should actively engage with texts and be able to express simple ideas. This is consistent with the characteristics of rapid language development among children aged 4–5 years described by H. Kurniawan and Kasmianti (2020), as well as Haryanti and Tejaningrum (2020), in which children's natural curiosity about surrounding texts and symbols is channeled into meaningful communication.

The selection of a physical board game as an instructional medium also highlights the important role of external environmental factors associated with schools in determining learning quality, reinforcing theories concerning parental involvement (Annas et al., 2024, Asung, 2026) and teachers' instructional design (Asung, 2026). According to Syakban (2026), appropriate instructional media serve as a bridge that makes abstract concepts more understandable. This complements the perspectives of Riyadi et al. (2026), Ratnaningsih et al. (2026), and Karwati et al. (2026), who emphasize that visual learning aids based on tangible objects encourage children's direct participation. This positive development also reflects the findings of Fadilah et al. (2023) regarding the simplification of abstract information and Akyuna et al. (2025) concerning the creation of an enjoyable learning atmosphere. PALASTA fulfills the ideal criteria for early childhood instructional media: concrete (Sutaryani et al., 2026), appropriate to children's cognitive developmental levels (Komalasari & Santana, 2026), interactive (Nabila et al., 2026), safe and non-toxic (Bachtiar, 2026), and educational across

multiple aspects of child development.

Comparatively, the findings of this study demonstrate strong consistency with previous research. These results support the findings of Herawati et al. (2025), who reported that the use of letter blocks successfully increased children's reading readiness from 30% to 80%. The findings are also consistent with Rohayati and Budiarti (2022), who found that modifications to the traditional *engklek* game could foster children's enthusiasm for literacy activities. Furthermore, the results reinforce the study by Hoiriyah and Hasanah (2025) on literacy boxes, the research by Irfan and Iman (2026) concerning role-playing activities, and the analyses conducted by Ratno et al. (2026) and Waheda et al. (2026), which collectively demonstrate that interactive game-based instructional media have considerable potential to accelerate emergent literacy development among young children.

The novelty of this study lies in the development of the PALASTA educational game, which integrates various familiar images of celestial objects and outer space into a single, comprehensive interactive learning board. Each section of the board incorporates a combination of indicators from several categories, including visual responses to pictures, auditory-phonetic matching, cognitive word classification, and fine motor activities involving the imitation of letter symbols encountered by children both at school and at home. This integrative approach distinguishes the PALASTA educational game from instructional media examined in previous studies. Whereas previous

research focused on letter recognition or word repetition through particular instructional media, the present study integrates a universe theme with activities involving letter-sound recognition, comprehension of simple words, and practice in writing shapes or symbols within a single sequence of game-based activities. In addition, this study emphasizes the use of visual instructional media that enable children to interact directly with letter symbols through play activities. The novelty of this research lies in the integration of thematic elements and emergent literacy activities within the PALASTA medium, as well as the refinement of the medium based on the reflection results from each classroom action research (CAR) cycle. The findings revealed that the emergent literacy skills of children aged 4–5 years improved following the implementation of the PALASTA educational game, with the overall mean achievement increasing from 45.63% during the pre-cycle stage to 89.38% in Cycle II. These findings indicate that the PALASTA educational game can serve as an alternative instructional medium to support the development of emergent literacy skills among young children.

Conclusion

Based on the findings and discussion of the classroom action research conducted in this study, it can be concluded that the implementation of the PALASTA (*Papan Alam Semesta*) educational game effectively improved the emergent literacy skills of children aged 4–5 years. The empirical data demonstrated significant and progressive

improvements in children's emergent literacy scores across each research stage. During the pre-intervention stage, the overall mean emergent literacy achievement reached only 45.625%, which was classified as low or *Beginning to Develop*. Following the implementation of the PALASTA game in Cycle I, the overall mean achievement increased to 68.75%. Through systematic reflection, the instructional medium was refined in Cycle II by incorporating a complete set of alphabet letters directly onto the PALASTA board as print-rich visual cues, which successfully minimized children's visual-spatial confusion and enhanced their concentration. Consequently, the overall mean achievement increased substantially, reaching its highest level of 89.375% in Cycle II and successfully exceeding the predetermined research success criterion of 85%.

The results of the Normalized Gain (N-Gain) calculation further validated the high effectiveness of this intervention. The overall N-Gain score reached 0.80, which falls within the high category, demonstrating that the integrated and multisensory approach employed in the PALASTA game served as a powerful catalyst for emergent literacy development among young children. Ultimately, this study confirms that the use of interactive game-based instructional media, such as PALASTA, not only accelerates children's letter-sound recognition and word comprehension but also fosters a safe, independent, and supportive learning environment during the foundational stage of literacy development.

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