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Developing Engklek Literacy Media to Improve the Phonological Skills of 5–6-Year-Old Children at Telkom Rancaekek Kindergarten

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Abstract
Phonological ability is an important foundation for early childhood reading and writing readiness, but learning in early childhood education often takes place conventionally and does not utilize play activities. This study aims to develop Engklek Literacy Media and test its feasibility and limited effectiveness in improving the phonological abilities of children aged 5–6 years. The study used the Research and Development (R&D) method with the ADDIE model. The field test subjects were all children in group B at Telkom Rancaekek Kindergarten, consisting of Group B1 (28 children) and Group B2 (26 children). Both groups were positioned as two parallel implementation groups that both received media intervention. Data were collected through observation, interviews, documentation, and expert validation sheets, then analyzed descriptively and using N-Gain at the evaluation stage. The results showed that the media received a very feasible category from material experts (94%), media experts (91%), and language experts (92%) with an average feasibility of 92%. In the field test, the combined average score increased from 43 (51%) in the pretest to 59 (70%) in the posttest with an N-Gain of 39% in the moderate category. These findings indicate that the Engklek Literacy Media is feasible to use and has an indication of effectiveness in improving children's phonological abilities in the context of Telkom Rancaekek Kindergarten, although the interpretation of effectiveness needs to be done proportionally because the research design is still pre-experimental and the intervention duration is relatively short.

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1. INTRODUCTION

Phonological skills are a crucial part of emergent literacy because they provide the foundation for children to recognize, differentiate, and manipulate language sounds before entering formal reading instruction. Ideally, by the age of 5–6, children should be able to recognize rhyme, separate syllables, identify initial sounds, and demonstrate basic phonemic awareness. In the context of early childhood education (PAUD), strengthening phonological skills requires more than just worksheets or verbal drills; they require concrete, enjoyable, and meaningful learning experiences.

Initial observations at Telkom Rancaekek Kindergarten indicate a clear need for phonological learning innovation. Of the 54 children in group B, 67.5% were unable to identify the initial sounds of words, 72.3% had difficulty distinguishing rhyming words, and 81.4% were unable to manipulate phonemes in simple words. Teachers also reported that learning was still dominated by conventional methods, while children's engagement in literacy activities averaged only 12.4 minutes out of 30 minutes of instruction. These

findings indicate a gap between the demands of phonological abilities and the learning strategies available in the classroom.

One relevant approach for early childhood is play-based multisensory learning. Activities involving body movement, visual stimulation, and auditory responses provide greater opportunities for children to construct meaning, maintain attention, and remember learning experiences. Within this framework, the traditional game of engklek holds great potential because it is culturally familiar, requires motor coordination, and is easily modified into a literacy medium. The transformation of engklek from a recreational game into a learning medium opens up space for the simultaneous integration of cultural, motor, social, and linguistic aspects.

In the relatively transparent Indonesian language, the relationship between graphemes and phonemes is actually easier for children to grasp than in languages with inconsistent orthography. However, this ease doesn't automatically emerge without gradual, context-rich learning experiences. Children still need a pedagogical bridge that takes them from the sounds, syllables, and words they hear every day to an awareness of letter forms and language structure. Therefore, media that places language sounds within familiar and concrete activities is highly relevant for development.

Previous research has shown that game-based phonological interventions can improve literacy readiness, but most studies have focused on digital media, computer programs, or general early reading outcomes. On the other hand, research on engklek has generally focused on numeracy, general child development, or early reading in elementary school. Therefore, there is still room for development of engklek media that explicitly target early childhood phonological abilities in the Indonesian language context.

Furthermore, the use of hopscotch in early childhood education institutions often focuses solely on recreational or motor skills, even though the game's structure allows teachers to design clear learning objectives. Hopscotch squares can be filled with letters, pictures, syllables, or simple words; the gacuk (gacuk) throw can be transformed into a target selection strategy; and children's jumps can be combined with specific phonological responses. With the right modifications, a traditional game can become a rich, economical, and easily replicated learning tool.

Conceptually, this research is novel in three aspects. First, the media is specifically designed to train awareness of rhyme, syllables, initial sounds, and phoneme manipulation through systematic ankle-jumping activities. Second, the media is low-tech and low-cost, making it relevant for early childhood education units with limited resources. Third, the media development takes into account the local cultural context and the relatively transparent phonological characteristics of the Indonesian language. Thus, the media is not only visually appealing but also has a strong pedagogical and contextual basis.

Based on these problems, this study aims to: (1) analyze the need for developing Engklek Literacy Media, (2) describe the media development process, (3) test the feasibility of the media based on expert validation, and (4) analyze the limited effectiveness of the media in improving children's phonological abilities at Telkom Rancaekek Kindergarten. This article is a summary of the thesis results that have been re-arranged following the JISIP journal article format.

Table 1. Summary of previous research and research novelty

No	Study	Focus/Method	The Gaps This Research Fills
1	Lake & Foundation (2024)	Digital games and phonological programs; quasi-experiments	Effective for phonological awareness, but digital-based and does not yet utilize the local Indonesian cultural context.

2	O'Callaghan et al. (2016)	Computer literacy program; randomized controlled trial	Shows impact on phonological skills, but the media is computerized and English language.
3	Verhoeven et al. (2020)	Meta-analysis of computer-assisted literacy interventions	Reinforces the importance of assistive devices/interventions, but does not highlight traditional active-motor play.
4	Hidayatu Munawaroh (2017)	R&D of traditional engklek games in PAUD	Based on hopscotch for early childhood development, but not yet focused on phonological abilities.
5	Ratna Dewi et al. (2023)	Literacy media for reading at the beginning of grade 1 of elementary school	Both use engklek, but the subject of elementary school and the outcome are beginning reading, not TK phonology.

2. RESEARCH METHODS

This study employed the Research and Development (R&D) method with the ADDIE model, which encompasses the stages of analysis, design, development, implementation, and evaluation. This model was chosen because it provides a systematic flow for producing learning products while simultaneously testing their feasibility and limited effectiveness. In the implementation-evaluation stage, effectiveness testing was conducted using a one-group pretest-posttest pre-experimental design applied to two parallel implementation groups, Groups B1 and B2.

The research was conducted at Telkom Rancaekek Kindergarten, Bandung Regency, during the odd semester of the 2025/2026 academic year. The subjects were 54 children in Group B, consisting of 28 children in Group B1 and 26 children in Group B2. Both groups received the same treatment using Engklek Literacy Media for four weeks with a frequency of three meetings per week, resulting in a total of 12 learning sessions. Each session lasted approximately 60–75 minutes.

The product developed is a 2.5 m x 1 m hopscotch carpet with eight main squares, a letter panel, a word panel, supporting cards, and a user guide. The media is designed to facilitate letter sound recognition, initial sound identification, rhyming word searches, syllable segmentation, and simple phoneme manipulation. This design simultaneously integrates motor activities, social interaction, and language reinforcement.

In practice, each session consists of preparation, warm-up, core, and reflection stages. In the preparation stage, the teacher arranges the media and conditions the play area. The warm-up stage is used to train children's physical and vocal readiness. The core stage includes several rounds of activities: recognizing letter sounds, matching initial sounds to words, and finding words that have certain sound patterns. In the reflection stage, children are encouraged to recite the letters or words they learned and share their play experiences.

Data collection was conducted through observation, interviews, documentation, and validation sheets from material experts, media experts, and language experts. Expert validation used a Likert scale to assess the appropriateness of content, presentation, language, practicality, safety, and pedagogical aspects. Qualitative data were analyzed descriptively to illustrate the results of the needs analysis and product revisions, while quantitative data from the pretest and posttest were analyzed using achievement percentages and normalized gain (N-Gain).

Ethically, the research was conducted after obtaining permission from the educational institution and parental/guardian consent. Children's identities were kept confidential, and

their participation took place in a safe, comfortable, and enjoyable play environment. Children who showed discomfort during the activity were not forced to continue participating.

3. RESULTS AND DISCUSSION

3.1. Media Development and Feasibility

A needs analysis showed that teachers require phonological learning media that is non-monotonous, involves physical movement, is easy to use in groups, and is appropriate for the characteristics of early childhood. Observations also showed that learning that is too focused on worksheets quickly makes children bored and less engaged. Based on this, the Engklek Literacy Media was developed as a play-based learning tool that combines engklek, letter-word panels, support cards, and step-by-step activity guides.

During the development stage, the media prototype was revised based on validator input. Material experts emphasized strengthening the difficulty gradient and adding word variations; media experts highlighted practicality and physical endurance; and language experts emphasized clarity of instructions and simplicity of sentences. The average validation results placed the media in the very feasible category, thus deeming the product ready to be tested in a real learning context.

By design, the media serve not only as a visual aid but also as a learning scenario. Children don't simply see letters or words; they move toward targets, hear instructions, choose responses, and interact with peers. Thus, the developed product has both pedagogical and cultural value because it utilizes traditional games familiar to children.

Table 2. Core components of Engklek Media Literacy and pedagogical functions

No	Component	Pedagogical Function
1	Crank carpet 2.5 m × 1 m	Become the main arena for children's games and motor skills.
2	Eight main boxes	Become a jumping target space for letter, word, and sound activities.
3	Letter panel	Practice letter recognition and letter-sound correspondence.
4	Word/image panel	Supports initial sound identification, rhyme, and meaningful word recognition.
5	Supporting card	Used for game variation, scaffolding, and task differentiation.
6	Teacher's guide	Ensure the implementation of game steps, assessments, and reflections.

Table 3. Recapitulation of expert validation results for Engklek Literacy Media

Validator	Percentage (%)	Category	Key Notes
Subject matter expert	94	Very Worthy	Materials according to child characteristics, relevant phonological indicators, and systematic presentation.
Media member	91	Very Worthy	Attractive appearance, safe, pedagogical, and practical enough for indoor and outdoor use.

Linguist	92	Very Worthy	The instructions are clear, the vocabulary is age-appropriate, and the readability of the media is excellent.
Rate-rate	92	Very Worthy	The media is suitable for field testing after minor revisions.

3.2. Media Effectiveness

Field trials demonstrated that the use of Engklek Literacy Media positively impacted children's phonological abilities in both implementation groups. Before the intervention, the combined average achievement of children was still at 51%, or in the developing category. After 12 learning sessions, the combined average increased to 70%. This improvement demonstrates that the media provides a more active and focused learning experience than previous learning practices.

The combined N-Gain score of 39% indicates moderate effectiveness. While not high, this result is realistic for the gradual development of early childhood phonological skills. The difference in N-Gain between groups, which was only two percentage points, also demonstrates the consistency of media implementation in two different regular classes.

The pattern of improvement also appeared across the four measured areas. Initial sounds were the most responsive to intervention, while rhyme showed the least improvement. This suggests that some phonological components may require different levels of training. For teachers, this information is crucial for designing more targeted follow-up learning activities that address areas of weakness.

Table 4. Comparison of pretest, posttest, improvement, and N-Gain results

Group	n	Pretest	Posttest	Improvement	N-Gain	Category
B1	28	44 (52%)	60 (71%)	16 (19%)	40	Currently
B2	26	42 (50%)	58 (69%)	16 (19%)	38	Currently
Combination	54	43 (51%)	59 (70%)	16 (19%)	39	Currently

Table 5. Improvement per aspect of phonological ability

No	Aspect	Increase (%)
1	Rhyme Awareness	16
2	Syllable Awareness	19
3	Early Sound Awareness	21
4	Phoneme Manipulation	18

3.3. Discussion

The research results show that traditional game-based media can be an effective alternative for phonological learning in early childhood education (PAUD). The main strength of Engklek Literacy Media lies in its multisensory nature: children hear sounds, see symbols, move, jump, and interact with friends in a single learning experience. This environment supports children's active engagement and helps reinforce memory encoding more strongly than purely verbal exercises. High engagement during play also indicates that children perceive learning as a fun activity, not an academic burden.

These findings align with the concept of guided play, which states that academic learning goals can be achieved without diminishing the essence of children's play. The teacher remains a facilitator, setting rules, asking guiding questions, and providing scaffolding, but children are given the freedom to move, choose, and interpret their

learning experiences. In the context of early childhood education (ECE), this balance between teacher direction and freedom to play is crucial to achieving learning goals without neglecting children's developmental characteristics.

The highest improvement in initial sounds (21%) is understandable because the core media activities require children to connect initial sounds with target letters or words. Meanwhile, the lower improvement in rhyme (16%) suggests that this aspect requires more and more consistent practice. This finding is important for teachers because it suggests the need for activity differentiation; some children may develop more quickly in initial sounds than in rhyme or phoneme manipulation.

In terms of feasibility, the consistent assessments by material experts, media experts, and language experts confirm that the product development is not only visually appealing but also content-valid, safe, practical, and communicative. This demonstrates that the ADDIE-based development process can produce media that is appropriate to field needs and easily replicated in other PAUD units. The media's low-tech and low-cost nature also adds value, especially for schools with limited digital devices.

A medium score for effectiveness actually provides a realistic picture. Phonological skills are not something that develops instantly; children need repetition, variation, and sufficient time to internalize sound patterns. With a four-week intervention, the increase from 51% to 70% demonstrates a significant contribution from the media. These results also confirm that active, repetitive, and contextual learning can shift phonological learning practices from passive to more meaningful.

However, the effectiveness findings should be interpreted with caution. This study used a pre-experimental design without a control group, so the increase in scores cannot yet be interpreted as a strong causal relationship. Furthermore, the intervention lasted only four weeks with 12 sessions, so the results are more appropriately interpreted as an indication of effectiveness in a limited field context. Further research with a more rigorous experimental design and longer intervention duration is needed to strengthen the evidence of media's benefits.

From a cultural perspective, the use of hopscotch also demonstrates that traditional games remain highly relevant in contemporary education. When local games are integrated into clear academic objectives, children not only learn language but also interact with cultural forms close to their lives. This way, the learning medium becomes more contextual and has the potential to build children's emotional connection to the learning process.

Practically, this research implies that phonological learning in early childhood education (PAUD) should be designed as a mobile, contextual, and culturally based learning experience. Teachers do not have to rely on digital media to develop early literacy; pedagogically modified traditional games can also serve as effective learning vehicles. With minor adaptations to classroom themes and school conditions, Engklek Literacy Media has the potential to be implemented more widely as an innovative language learning tool in early childhood education (PAUD) in Indonesia.

4. CONCLUSION

This study shows that the Engklek Literacy Media was successfully developed through the ADDIE model as a contextual, enjoyable, and appropriate phonological learning medium for children aged 5–6 years. The resulting product received an average validation of 92% from material experts, media experts, and language experts, making it highly suitable for use in learning.

During the implementation phase, the media demonstrated effectiveness in improving children's phonological abilities at Telkom Rancaekek Kindergarten. The combined score increased from 43 (51%) to 59 (70%), with an N-Gain of 39%, categorized as moderate. The greatest improvement occurred in early sound awareness, followed by syllable awareness, phoneme manipulation, and rhyme awareness. These findings demonstrate that integrating play, motor skills, and language stimulation can be a meaningful learning strategy for early literacy.

However, conclusions about effectiveness still need to be balanced, as the study did not use a control group and the intervention time was limited. Therefore, further studies with a more robust experimental design, broader subject coverage, and longer duration are highly recommended to strengthen the empirical evidence for the use of Engklek Literacy Media in more diverse early childhood education units.

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