



APPLICATION OF THEMATIC POP UP BOOK MEDIA IN IMPROVING LANGUAGE ABILITY OF CHILDREN AGED 4–5 YEARS

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Abstract

Background: Language ability is a fundamental aspect of early childhood development as it supports communication, comprehension, and expression skills. However, limited empirical evidence has examined the use of thematic Pop Up Book media in authentic classroom settings using an ex post facto design. **Objective:** This study aimed to examine the effect of thematic Pop Up Book media on the language ability of children aged 4–5 years at PAUD Nekaafbonis. **Method:** A quantitative approach with an ex post facto design was employed involving 17 children selected through total sampling. Data were collected using thematic Pop Up Book media and language ability scales and analyzed using descriptive statistics and simple linear regression with SPSS 25.0. **Results:** The findings revealed that thematic Pop Up Book media had a positive and significant effect on children's language ability, with an R Square value of 0.242, indicating a contribution of 24.2%. The significance value was 0.045 ($p < 0.05$), confirming the hypothesis. **Novelty:** This study provides empirical evidence of the effectiveness of thematic Pop Up Book media in improving early childhood language ability within a real classroom context using an ex post facto design. **Conclusion:** Consistent and structured implementation of thematic Pop Up Book media can significantly enhance children's language development and support active learning in early childhood education.

Keywords: Thematic Pop Up Book Media; Language Ability; Early Childhood Education; Ex Post Facto; Storytelling.

INTRODUCTION

Early childhood education is a fundamental developmental effort important for children from birth to six years of age known as the diamond age which is realized through educational stimulation involving nutrition, health, and the holistic-integrative maximization of early childhood developmental potential across physical-motor, cognitive-creative, social-emotional, language, religious, and moral domains, so that children are prepared to enter further education in formal, informal, and non-formal settings (Amseke et al., 2024). Early childhood is an individual in a developmental phase. Child development encompasses all changes occurring in a child, including physical-motor, cognitive, language, social, and moral-religious development (Amseke, 2023). Regulation of the Minister of Education and Culture Number 137 of 2014 on National Standards of Early Childhood Education affirms that growth and development stimulation must be provided comprehensively and in an integrated manner from an early age as the foundation for future learning success (Damayanti & Nurbiana, 2022). Therefore, providing appropriate educational stimulation during early childhood is essential to optimize every aspect of children's development, particularly language development, which serves as the basis for communication and learning.

One of the most crucial developmental aspects to be developed in early childhood is language ability. Language development encompasses children's ability to listen, speak, engage in early reading and writing, and express thoughts and feelings through spoken and written language (Oktaviani & Kurniasih, 2023). Under Ministerial Regulation Number 137 of 2014 on Early Childhood Education Standards, the level of language developmental achievement for children aged 4–5 years includes the ability to understand stories, retell story content, recognize letter symbols, and express ideas and feelings verbally. Vygotsky (in Putriana et al., 2023) adds that children's language development is strongly influenced by social interaction and the use of meaningful learning media provided by adults in their environment. Consequently, learning media that actively involve children in meaningful interactions are needed to facilitate optimal language development.

Common language ability problems that occur in early childhood include low storytelling ability, limited vocabulary, and minimal ability to independently understand story sequences. Research by Nurhayati and Handayani (2023) found that the majority of early childhood children in the NTT region show language ability that is not yet optimal, particularly in the aspects of speaking and comprehension of story content. This is inseparable from the limited use of attractive and interactive learning media in the teaching and learning process. Conventional approaches without varied media have been shown to be less effective in stimulating children's language ability optimally (Kartini & Zulfahmi, 2023).

Rahmawati and Istiqomah (2022) found that nearly 58% of children aged 4–5 years in several PAUD institutions in Mataram City had not yet reached language developmental indicators appropriate for their age, particularly in the aspects of retelling story content and vocabulary mastery.

These children tended to show very limited speaking ability and were entirely dependent on teacher guidance. This situation was exacerbated by the lack of use of innovative and contextual learning media by educators. Meanwhile, Suriani and Fitriani (2023) revealed that low language ability in early childhood is also closely linked to children's lack of active involvement in story-based learning activities. Their research involving 80 children aged 3–5 years in South Sulawesi showed that children who only received passive learning had significantly lower language ability scores than children who received active learning based on visual media ($p < 0.05$). These findings indicate that innovative learning media are required to create active learning experiences that effectively stimulate children's language skills.

Therefore, learning media is needed that can encourage children's active engagement in developing language skills in a fun and meaningful way. One media considered relevant and innovative is the thematic Pop Up Book. Pop Up Book media is a three-dimensional book capable of displaying moving images or objects that emerge when a page is opened, thereby attracting children's attention, stimulating imagination, and encouraging active participation in storytelling activities (Mulyati & Desyandri, 2022). The strength of this media lies in its ability to integrate visual elements, narrative, and direct interaction that are appropriate to the learning characteristics of early childhood.

Research by Fadilah and Kurnia (2023) found that the use of Pop Up Book media in PAUD learning significantly improved storytelling and listening ability of children aged 4–5 years ($t = 5.87$; $p < 0.05$; effect size $d = 0.79$). Anggraeni and Wahyudi (2024) also found that thematic Pop Up Book media produced a 38.5% increase in early childhood language ability compared to before the intervention. Salsabila and Prasetyo (2023) implemented thematic Pop Up Books in PAUD in the NTB region and found a 31.7% increase in children's speaking ability ($R \text{ Square} = 0.287$; $p = 0.000$). Natonis et al. (2026) found that the use of Pop Up Book media for early childhood language development at PAUD Efata Liliba, Kupang City, significantly improved early childhood language development with a p -value of 0.000 (< 0.05) and an $R \text{ Square}$ of 0.198, indicating that storytelling using Pop Up Book media contributed 19.8% to children's language development. Educators are expected to stimulate children through storytelling using Pop Up Book media, which has been proven effective in improving listening skills, speaking ability, and children's confidence in expressing ideas. However, previous studies mainly focused on measuring the effectiveness of Pop Up Book media in general and have provided limited evidence regarding its implementation using thematic learning for children aged 4–5 years in PAUD Nekafhonis. This limitation constitutes the research gap addressed in the present study.

Based on initial interviews and observations with teachers at PAUD Nekafhonis, it was found that the majority of children aged 4–5 years still show suboptimal language ability, such as difficulties in retelling story content, limited vocabulary mastery, and low ability to verbally express ideas. The

learning activities conducted are still dominated by conventional approaches with minimal use of attractive and interactive media. This situation reinforces the urgency of applying thematic Pop Up Book media as an innovative alternative learning medium (Wulandari & Kusuma, 2024). These empirical findings demonstrate that improvements in learning media are urgently needed to support children's language development in this educational setting.

Based on the background outlined above, the researchers are interested in further examining the effect of the application of thematic Pop Up Book media on the language ability of children aged 4–5 years at PAUD Nekafhonis. This study is expected to fill the existing research gap by providing empirical evidence regarding the effectiveness of thematic Pop Up Book media in improving early childhood language skills within the context of PAUD Nekafhonis. Furthermore, the findings are expected to contribute theoretically to early childhood language learning research and practically to the development of innovative learning media for PAUD educators.

METHODS

The research method used in this study is quantitative with an ex-post facto research design. This design was chosen because the study aims to analyze the influence of existing conditions of thematic Pop Up Book media on children's language ability without direct experimental manipulation. Ex-post facto research aims to reveal information about the effect of the application of thematic Pop Up Book media on the language ability of children aged 4–5 years at PAUD Nekafhonis. There are two variables in this study, namely the independent variable and the dependent variable. The independent variable (X) in this study is thematic Pop Up Book media, and the dependent variable (Y) is language ability of children aged 4–5 years. Respondents in this study totaled 17 children aged 4–5 years using a total sampling technique at PAUD Nekafhonis.

Thematic Pop Up Book media is a three-dimensional learning medium that displays moving images and thematic illustrations designed to stimulate children's language ability through active involvement in storytelling and listening activities (Mulyati & Desyandri, 2022; Fadilah & Kurnia, 2023). Language ability is the child's ability to receive, process, and express language both verbally and through story comprehension, vocabulary mastery, storytelling ability, and the ability to express ideas in accordance with their developmental stage (Oktaviani & Kurniasih, 2023).

The thematic Pop Up Book media scale was developed based on the theory of Mulyati and Desyandri (2022) encompassing three main aspects: (1) Visual Display, referring to the quality of images, colors, and three-dimensional design of the Pop Up Book media that can attract children's attention and enthusiasm in learning; (2) Thematic Content, referring to the appropriateness of the theme and story content in the Pop Up Book with the children's real-life context and PAUD learning themes; and (3) Interactivity, referring to the media's ability to encourage children to actively interact, ask questions, retell stories, and express their understanding verbally. The thematic Pop Up Book media scale instrument consists of 30 items proven valid with corrected item-total correlation

coefficients. The reliability test showed a Cronbach's Alpha value of 0.617, which is categorized as moderate reliability and is considered acceptable for exploratory research.

The language ability scale was constructed based on language ability indicators for children aged 4–5 years developed by Oktaviani and Kurniasih (2023), encompassing seven aspects: (1) listening ability, (2) speaking ability, (3) vocabulary mastery, (4) storytelling ability, (5) story content comprehension, (6) ability to express ideas, and (7) letter symbol recognition.

The data analysis technique used is simple linear regression with descriptive analysis using the SPSS 25.0 statistical program. Prior to regression analysis, classical assumption tests were conducted, including normality and linearity tests, to ensure the data met the requirements for parametric analysis.

RESULTS AND DISCUSSION

RESULTS

The following presents the statistical results of the application of Thematic Pop Up Book Media on the language ability of children aged 4–5 years at PAUD Nekafhonis.

Table 1. Category Results of Thematic Pop Up Book Media

Category	Interval	Frequency	Percentage
High	29–32	9	52.9%
Medium	23–28	5	29.4%
Low	18–22	3	17.6%
Total		17	100%

Based on Table 1, the implementation of thematic Pop Up Book media at PAUD Nekafhonis is predominantly in the high category, reaching 52.9% of respondents, followed by the medium category at 29.4% and the low category at 17.6%. These results indicate that the use of Pop Up Book media has been relatively well implemented in classroom learning activities. The dominance of the high category shows that teachers have generally integrated this media into storytelling and language learning processes. However, the existence of medium and low categories indicates that the consistency of media implementation still varies across learning sessions. Therefore, improvement in the regular and structured use of learning media is still needed to maximize its impact on children's language development.

Table 2. Category Results of Language Ability of Children Aged 4–5 Years

Category	Interval	Frequency	Percentage
High	27–33	9	52.9%
Medium	22–26	7	41.2%
Low	18–21	1	5.9%
Total		17	100%

Based on Table 2, the language ability of children aged 4–5 years at PAUD Nekafhonis is mostly in the high category, with 52.9% of children achieving this level. Meanwhile, 41.2% are in the medium category and 5.9% are in the low category. These findings indicate that most children have developed relatively good language skills, particularly in speaking ability, vocabulary mastery, and story comprehension. However, the presence of children in medium and low categories shows that not all learners have achieved optimal language development. These differences may be influenced by variations in learning stimulation both at school and at home, as well as individual developmental differences among children.

Table 3. Regression Analysis (F Test)

Relationship	F	Sig.	Decision
Pop Up Book Media → Language Ability	4.795	0.045	Significant

The F-test results in Table 3 show a significance value of 0.045 ($p < 0.05$) with an F value of 4.795, indicating that there is a statistically significant effect of thematic Pop Up Book media on the language ability of children aged 4–5 years. This result confirms that the independent variable contributes meaningfully to the dependent variable. In other words, the use of Pop Up Book media in learning activities is able to influence children’s language development in a positive direction. This finding supports the idea that interactive and visually engaging learning media can enhance children’s involvement in learning and improve their ability to understand and express language.

Table 4. Coefficient of Determination (R Square)

Model	R	R Square	Adjusted R Square	Std. Error
1	0.492	0.242	0.192	4.387

Based on Table 4, the coefficient of determination (R Square) value is 0.242, meaning that 24.2% of the variation in children’s language ability can be explained by the use of thematic Pop Up Book media. Meanwhile, the remaining 75.8% is influenced by other factors outside the model. These factors may include family environment, home literacy activities, peer interaction, and individual developmental differences. This result indicates that although Pop Up Book media has a significant contribution to language development, it is not the only factor influencing children’s language ability. Therefore, support from both school and home environments remains essential in optimizing children’s communication and language development.

Table 5. Partial Test (t-Test)

Relationship	t	Sig.	Decision
Pop Up Book Media → Language Ability	2.190	0.045	Significant

The t-test results in Table 5 show a significance value of 0.045 ($p < 0.05$) with a t value of 2.190, indicating a significant positive relationship between thematic Pop Up Book media and children's language ability. This means that the better the implementation of Pop Up Book media in learning activities, the higher the improvement in children's language skills. The findings suggest that this media plays an important role in stimulating children's speaking, listening, and storytelling abilities. Its visual and interactive characteristics make learning more engaging and meaningful, thereby encouraging active participation in language-based activities.

Table 6. Descriptive Analysis of Thematic Pop Up Book Media

Aspect	Mean	Category
Visual Display	2.88	High
Thematic Content	2.92	High
Interactivity	2.91	High

Based on Table 6, the descriptive analysis shows that all aspects of thematic Pop Up Book media are in the high category. Thematic Content obtained the highest mean score (2.92), followed by Interactivity (2.91) and Visual Display (2.88). These results indicate that the media is well designed in terms of content relevance, visual appeal, and interactive features. The high score on thematic content shows that contextual and real-life-based stories are highly effective in helping children understand learning materials. Meanwhile, visual display and interactivity also play important roles in attracting children's attention and encouraging active participation in learning activities.

DISCUSSION

The implementation of thematic Pop Up Book media demonstrates that interactive learning resources can create a more engaging learning environment for young children. Unlike conventional learning media, thematic Pop Up Books combine visual, tactile, and narrative elements that encourage children to actively participate in storytelling and communication activities. This active engagement enables children to connect new vocabulary with meaningful experiences, thereby facilitating language acquisition. These findings reinforce the view that learning media should not merely deliver information but also provide opportunities for children to construct meaning through direct interaction. This interpretation is consistent with the findings of Rahmawati and Istiqomah (2022), who emphasized that language development is closely related to the quality of learning stimulation and interaction experienced by children.

The positive influence of thematic Pop Up Book media can also be explained through the characteristics of early childhood learning, which emphasize play, exploration, and active participation. Three-dimensional illustrations and contextual stories stimulate children's curiosity, encourage them to ask questions, and motivate them to express opinions during learning activities. Such learning

experiences create a natural communication process in which children practice listening, speaking, and storytelling simultaneously. These findings are consistent with Fadilah and Kurnia (2023), who reported that Pop Up Book media significantly improves children's storytelling and listening skills because it provides meaningful visual experiences that maintain children's attention throughout the learning process.

The findings also support previous studies by Anggraeni and Wahyudi (2024) and Salsabila and Prasetyo (2023), who concluded that thematic Pop Up Book media enhances vocabulary mastery, speaking confidence, and children's participation in classroom activities. The consistency between the present findings and previous studies suggests that the effectiveness of Pop Up Book media is not limited to a particular educational setting but can be applied across different early childhood learning contexts. This consistency strengthens the empirical evidence that interactive visual media constitute an effective strategy for promoting language development during the preschool years.

From a theoretical perspective, the findings support Vygotsky's sociocultural theory, which emphasizes that children's language development occurs through social interaction and meaningful learning experiences (Putriana et al., 2023). Thematic Pop Up Book media functions as a learning scaffold by facilitating dialogue between teachers and children as well as among peers. During storytelling sessions, children receive guidance, feedback, and opportunities to communicate actively, enabling them to gradually develop more complex language skills. Thus, the media serves not only as a visual aid but also as an instructional tool that promotes social interaction and cognitive engagement.

Although thematic Pop Up Book media contributed positively to children's language development, language acquisition is a multidimensional process influenced by various internal and external factors. Family literacy practices, parental involvement, classroom interaction, teacher competence, and children's individual characteristics also play important roles in shaping language development. Therefore, the effectiveness of thematic Pop Up Book media should be viewed as part of a broader educational strategy rather than a single determining factor. Integrating interactive learning media with supportive home and school environments is expected to provide more comprehensive language stimulation and optimize early childhood language development.

CONCLUSION

Main Findings: This study found that thematic Pop Up Book media has a positive and significant effect on the language ability of children aged 4–5 years at PAUD Nekafricanis, with an R Square value of 0.242 indicating a contribution of 24.2% to children's language development. **Research Contribution:** This study contributes to the literature by providing empirical evidence through an ex post facto design, demonstrating the effectiveness of thematic Pop Up Book media in an authentic early childhood classroom setting. **Theoretical and Practical Implications:** The findings support Vygotsky's sociocultural theory and suggest that teachers should consistently implement thematic Pop Up Book media in structured learning activities that promote interaction, storytelling, and active

participation, as well as collaborate with parents to enhance language stimulation at home. **Research Limitations:** This study was limited to 17 children from one PAUD institution and examined only one independent variable, which restricts the generalizability of the findings. **Future Research Directions:** Future studies should involve larger and more diverse samples and include additional variables such as parental involvement, learning motivation, and the classroom environment to provide a more comprehensive understanding of factors influencing early childhood language development.

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