



EFFECTS OF WIMMELBOOK-BASED INTERACTIVE MEDIA ON EARLY CHILDHOOD SPEAKING SKILLS DEVELOPMENT: AN EXPERIMENTAL STUDY

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Abstract

Speaking ability is one of the important aspects in the development of early childhood language that needs to be developed through interesting learning activities and in accordance with the characteristics of children. Based on the results of observations at the Angkasa Lanud Padang Kindergarten, children's speaking ability has not developed optimally because the learning media used is less varied and has not been able to encourage children to actively communicate. This study aims to determine the effect of the use of *Wimmelbook* media on the development of children's speaking ability at the Angkasa Lanud Padang Kindergarten. The study used a quantitative approach with a quasi-experimental method using a *Non-Equivalent Control Group Design*. The research sample consisted of 30 children in group B consisting of 15 children in the experimental class and 15 children in the control class. Data were collected through speaking ability tests using observation sheets, then analyzed using normality tests, homogeneity tests, and independent sample t-tests with the help of SPSS 26. The results showed that the average speaking ability of children in the experimental class increased from 17.2 to 23.2, while in the control class increased from 16.9 to 19.9. The results of the hypothesis test showed a Sig. value. (2-tailed) of 0.015 (<0.05), indicating a significant effect of the use of *Wimmelbook* media on the development of children's speaking skills.

Keywords: Speaking skills, *Wimmelbook*, early childhood, learning media, early childhood education.

INTRODUCTION

Education plays a vital role in improving the quality of human resources at the global level. This is in line with the fourth goal of the *Sustainable Development Goals* (SDGs), namely Quality Education, which emphasizes the provision of inclusive, equitable, and quality education for all. One of the key SDG targets is to ensure that all learners achieve literacy and numeracy competencies by 2030 (Nations, 2015). Nevertheless, Indonesia continues to face significant challenges in achieving this target. According to the 2022 *Programme for International Student Assessment* (PISA), Indonesian students obtained an average reading literacy score of 359, which remains substantially below the OECD average of 476 (OECD, 2023).

The PISA findings indicate that the literacy proficiency of Indonesian students still requires serious attention. This condition suggests the existence of fundamental challenges in language development that should be addressed from early childhood. According to Nasma & Eliza (2025), reading proficiency is strongly influenced by the development of oral language skills. Therefore, strengthening Early Childhood Education (ECE) represents a strategic approach to establishing a solid foundation for language development while enhancing children's literacy outcomes in subsequent levels of education. ECE plays a crucial role because children aged 0-6 years are in the golden age of development, a period characterized by rapid growth and development that has a profound influence on subsequent developmental stages (Suryana et al., 2022). Furthermore, Revenia & Eliza (2022) explained that the primary objectives of ECE are to stimulate children's overall potential, develop their social skills, and prepare them mentally and cognitively for the next level of education.

One form of formal *Early Childhood Education* (ECE) in Indonesia is Kindergarten, which aims to provide appropriate stimulation for children aged 4-6 years as preparation for primary education. Among the various developmental domains that need to be optimized, oral language development, particularly speaking ability, is considered one of the most essential. Language

development plays a fundamental role in children's lives, as it serves as the foundation for interacting with their environment, developing a positive self-concept, and expressing their thoughts, desires, and emotions to others (Yulia & Eliza, 2021). Consistent with this view, language enables children to express ideas, opinions, and feelings, as well as communicate messages effectively to others. Through language, children interact with their peers, establish social relationships, and actively participate in learning experiences that support their overall development (Sakdiah & Eliza, 2021). Vocabulary acquisition is a crucial component of language development because it underpins both spoken and written communication. The larger a child's vocabulary, the more effectively they can express their thoughts and feelings through speech. Accordingly, Nurhayani & Eliza (2022) argued that vocabulary is a fundamental component of communication in both speaking and writing. Therefore, speaking ability functions not only as a means of communication but also as a foundation for children's literacy development.

From a theoretical perspective, children's language acquisition is supported by an innate capacity known as the *Language Acquisition Device* (LAD). According to this theory, children possess an internal mechanism that enables them to acquire language structures naturally through exposure to linguistic input from their surrounding environment (Chomsky, 1982). However, this innate ability cannot develop optimally without continuous stimulation through social interaction and meaningful language experiences. Therefore, the environment plays a crucial role in supporting children's speaking development and helping them achieve expected language milestones (Maghfiroh & Eliza, 2021).

With adequate innate abilities and appropriate stimulation, children aged 5-6 years are generally capable of producing more complex sentences and possess a broader vocabulary. They are also able to engage in two-way conversations, respond to questions more clearly, and retell simple experiences or events (Wati & Yulsyofriend, 2019). These abilities can develop optimally when children are provided with consistent opportunities to practice speaking through various learning activities. This perspective is consistent with the principles of the Merdeka Curriculum, which places learners at the center of the learning process through flexible activities that encourage active participation (Baruta, 2023). However, such ideal conditions have not yet been fully realized in many early childhood education institutions.

Observations conducted at Angkasa Lanud Padang Kindergarten revealed that several children still experienced difficulties in expressing their ideas verbally. Some children appeared less active during classroom activities, were unable to respond fluently to teachers' questions, and had difficulty conveying their ideas in a coherent and clear manner. These findings suggest that the learning stimulation provided has not been sufficient to fully support children's language development. One possible contributing factor is the limited variety of instructional media used during the learning process. The available learning media have not provided adequate opportunities for children to interact, engage in discussions, or actively develop their speaking skills. In fact, speaking development requires learning media that are engaging, concrete, and capable of stimulating children's imagination, thereby encouraging them to communicate and tell stories (Chandra & Eliza, 2020).

To address these challenges, more innovative learning media that are appropriate for the developmental characteristics of young children are needed. Aprinawati (2017) demonstrated that visual media can effectively stimulate children's language development. One promising form of visual media is the *Wimmelbook*. According to Rémi (2010) a *Wimmelbook* is a large-format picture book filled with detailed illustrations without accompanying text. This distinctive characteristic encourages children to observe, interpret, and construct stories based on the images they see. Unlike conventional storybooks that present a fixed storyline, *Wimmelbooks* provide children with the freedom to create their own narratives, thereby enriching their vocabulary while simultaneously fostering confidence in speaking (Rybak, 2024). Despite its considerable potential to support visual literacy and cognitive development, empirical research examining the effectiveness of *Wimmelbooks* in enhancing children's speaking skills in Indonesia remains relatively limited.

RESEARCH METHODS

This study employed a quantitative approach using a quasi-experimental research design. Specifically, the study adopted a non-equivalent control group design, which involves two groups without random assignment of participants (Sugiyono, 2015). Both groups were administered a pre-test to assess the children's initial speaking abilities. The experimental group then received instruction using

the *Wimmelbook* as the learning medium, whereas the control group participated in conventional conversation-based learning activities typically implemented by the classroom teacher. Upon completion of the intervention, both groups were administered a post-test to examine changes in the children's speaking abilities.

The study was conducted at Angkasa Lanud Padang Kindergarten over approximately two weeks, from May 20 to June 9, 2026. The research site was selected based on preliminary observations indicating that the children's speaking abilities required further improvement through the use of more innovative instructional media.

The study population consisted of all 30 children enrolled in Group B at Angkasa Lanud Padang Kindergarten. A total sampling technique was employed, meaning that the entire population was included as the research sample. The sample comprised 15 children from Group B1 as the experimental group and 15 children from Group B2 as the control group. The experimental group received learning activities using the *Wimmelbook*, while the control group participated in the conventional conversation-based activities regularly conducted by the classroom teacher.

This study involved two variables: the independent variable and the dependent variable. The independent variable was the use of the *Wimmelbook* as an instructional medium, while the dependent variable was the children's speaking ability. The *Wimmelbook* intervention consisted of activities in which children observed illustrations, engaged in discussions, answered questions, and orally retold stories based on the pictures. Children's speaking ability was assessed using seven indicators: clear pronunciation, appropriate vocabulary use, the ability to construct simple sentences, speech fluency, the ability to express ideas, responsiveness to questions, and the use of appropriate intonation during speech.



Figure 1. The Wimmelbook Used in the Study

The research instrument consisted of an observation checklist designed to assess children's speaking ability based on indicators of early childhood language development. The instrument was validated by experts and its reliability was examined using Cronbach's Alpha with the assistance of SPSS version 26. The reliability analysis yielded a Cronbach's Alpha coefficient of 0.921, indicating that the instrument was highly reliable and appropriate for data collection.

The data were collected through observations using oral and performance-based assessments. The oral assessment was used to evaluate the children's ability to answer questions, express their ideas, and verbally describe the content of the pictures. Meanwhile, the performance-based assessment was conducted to observe the children's responses while pointing to pictures, following instructions, and participating in activities designed to naturally elicit their speaking ability. Data collection was conducted during both the pre-test and post-test sessions.

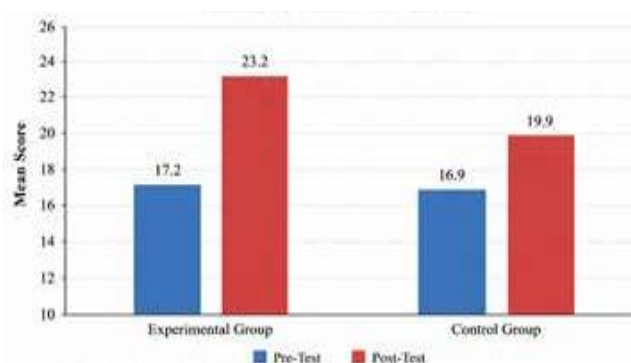
The data were analyzed using SPSS version 26. Prior to hypothesis testing, the data were subjected to a normality test using the Shapiro-Wilk test and a homogeneity of variance test using

Levene's Test to ensure that the assumptions for parametric statistical analysis were satisfied. Subsequently, the research hypothesis was tested using an Independent Samples *t*-test at a significance level of 0.05. The alternative hypothesis (H_a) was accepted when the Sig. (2-tailed) value was less than 0.05, indicating that the use of the *Wimmelbook* had a statistically significant effect on the speaking ability of young children.

RESULTS AND FINDINGS

This study aimed to examine the effect of using the *Wimmelbook* on the speaking ability of children at Angkasa Lanud Padang Kindergarten. The study involved two groups: an experimental group that received instruction using the *Wimmelbook* and a control group that participated in conventional conversation-based learning activities typically implemented by the classroom teacher. Before the intervention, both groups were administered a pre-test to assess the children's initial speaking abilities. Following the completion of the intervention, both groups were administered a post-test to evaluate the development of their speaking abilities.

Figure 2. Comparison of the Mean Pre-Test and Post-Test Scores of the Experimental and Control Groups



The findings revealed that the speaking ability of children in both groups improved following the learning process. However, the improvement was greater in the experimental group than in the control group. The experimental group obtained a mean pre-test score of 17.2, which increased to 23.2 on the post-test. In contrast, the control group achieved a mean pre-test score of 16.9, which increased to 19.9 on the post-test. These results indicate that the use of the *Wimmelbook* was more effective in improving children's speaking ability than conventional conversation-based learning activities.

Table 1. Normality Test Results (Shapiro-Wilk)

GROUP	TEST	N	STATISTIC	SIG.
EXPERIMENTAL	Pre-test	15	.922	.209
EXPERIMENTAL	Post-test	15	.950	.530
CONTROL	Pre-test	15	.938	.353
CONTROL	Post-test	15	.927	.245

The normality test results indicate that the data of both groups were normally distributed, as all Shapiro-Wilk significance values were greater than 0.05. Therefore, the data met the assumption of normality.

Table 2. Homogeneity Test Results

LEVENE STATISTIC	DF1	DF2	SIG.
0.085	1	28	0.773

The homogeneity test showed a significance value of 0.773 (>0.05), indicating that the variances of the experimental and control groups were homogeneous.

Table 3. Independent Samples *t*-test Results

GROUP	N	MEAN	SIG. LEVENE	SIG. (2-TAILED)
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EXPERIMENTAL	15	23.27	0.594	0.015
CONTROL	15	19.93		

Based on the results of the Independent Samples Test, the significance value of Levene's Test for Equality of Variances was 0.594, which is greater than 0.05. This indicates that the N-gain scores of the experimental and control groups had equal variances, satisfying the assumption of homogeneity. Furthermore, the Independent Samples *t*-test yielded a Sig. (2-tailed) value of 0.015, which is less than 0.05. Therefore, it can be concluded that there was a statistically significant difference in the N-gain scores between the experimental and control groups.

RESULTS AND DISCUSSION

Based on the findings of this study, the speaking ability of children in the experimental group improved after participating in learning activities using the *Wimmelbook*. This improvement was reflected in the children's increased participation during classroom activities, including their confidence in expressing opinions, responding to the teacher's questions, and retelling the stories represented in the illustrations they had observed. In addition to linguistic aspects, improvements were also observed in non-linguistic aspects, such as clearer intonation, more expressive delivery, and better-organized storytelling. These findings indicate that the *Wimmelbook* effectively stimulated children's expressive language development by encouraging them to communicate ideas, experiences, and understanding through oral language. Consistent with these findings, Husna & Eliza (2021) stated that expressive language reflects children's ability to actively communicate their understanding, observations, emotions, and thoughts through various forms of expression.

The analysis of each speaking indicator also demonstrated consistent improvement following the implementation of the *Wimmelbook*. Regarding the ability to answer questions, most children became capable of providing appropriate responses based on the illustrations they observed. Children who initially required considerable assistance from the teacher gradually became able to answer independently using simple sentences. Likewise, in terms of expressing ideas, the children became increasingly capable of describing the objects and activities depicted in the *Wimmelbook* illustrations. Furthermore, their vocabulary development also improved, as they began using a wider range of words that were more appropriate to the context of the stories they created.

The improvement in children's speaking ability can be attributed to the distinctive characteristics of the *Wimmelbook*, which presents richly detailed illustrations featuring numerous characters, objects, and activities within a single scene. These detailed illustrations encourage children to observe carefully, identify relevant information, and connect different visual elements to construct meaningful narratives. Furthermore, the *Wimmelbook* does not present a fixed storyline; instead, it gives children the freedom to interpret the events depicted in the illustrations according to their own understanding (Eliza, 2017). This process enables children to recognize objects, interpret the meaning of the illustrations, and communicate their observations through spoken language. These findings are consistent with Eliza's view that one of the strategies teachers can use to foster children's language development is the use of picture-based learning media. As a visual medium, pictures provide effective stimulation for early childhood language development by encouraging children to observe, interpret, and express their ideas verbally (Yulianti & Eliza, 2023).

The intervention, which consisted of three learning sessions using the *Wimmelbook*, demonstrated that children's speaking ability developed progressively over time. During the initial sessions, some children were still hesitant to express their opinions. However, after participating in several learning activities using the *Wimmelbook*, they became noticeably more confident when speaking. They also appeared more actively engaged in classroom activities, as the *Wimmelbook* encouraged them to explore the illustrations, participate in discussions, and share stories based on their individual observations.

Based on the score analysis, both the experimental and control groups demonstrated improvements in speaking ability after the learning process. However, the improvement achieved by the experimental group was substantially greater than that of the control group. In the control group, which participated in conventional conversation-based learning activities, the total pre-test score increased from 254 to 299 in the post-test, while the mean score improved from 16.93 to 19.93. In

contrast, the experimental group, which received instruction using the *Wimmelbook*, demonstrated a more substantial improvement, with the total score increasing from 258 in the pre-test (mean = 17.20) to 349 in the post-test (mean = 23.27). These results indicate that the use of the *Wimmelbook* was more effective in improving children's speaking ability than the conventional instructional approach implemented in the control group.

The greater improvement observed in the experimental group can be explained by the characteristics of the *Wimmelbook*, which created a more engaging and interactive learning environment. Rather than merely listening to the teacher's explanations, children actively participated in observing illustrations, identifying information, establishing connections among visual elements, and verbally expressing their ideas. These learning activities helped enrich children's vocabulary, strengthen their ability to construct simple sentences, and enhance their confidence in communicating with others. At the beginning of the study, the speaking abilities of the experimental and control groups were relatively comparable, as indicated by the similar pre-test scores. Following the intervention, however, the experimental group demonstrated greater improvement because the children were provided with opportunities to learn through engaging and communicative visual media. These findings are consistent with Hasan et al., (2021) who argued that instructional media play an important role in enhancing learners' interest, motivation, and active participation in the learning process. The appropriate use of learning media facilitates children's understanding of information while creating more meaningful learning experiences. In this study, the *Wimmelbook* functioned as an effective visual medium by stimulating children to observe, understand, and interpret illustrations, thereby promoting the development of their speaking ability.

Overall, the findings of this study indicate that there was a significant difference in the development of speaking ability between children in the experimental group who learned using the *Wimmelbook* and those in the control group who participated in conventional learning activities. Therefore, it can be concluded that the use of the *Wimmelbook* had a positive effect on the speaking ability of young children at Angkasa Lanud Padang Kindergarten.

CONCLUSION AND SUGGESTIONS

Conclusions

Based on the findings of this study, it can be concluded that the use of the *Wimmelbook* had a significant effect on the development of children's speaking ability at Angkasa Lanud Padang Kindergarten. This was evidenced by the increase in the experimental group's mean speaking score from 17.2 to 23.2, whereas the control group's mean score increased from 16.9 to 19.9. The Independent Samples *t*-test yielded a Sig. (2-tailed) value of 0.015 (< 0.05), indicating that the alternative hypothesis (H_a) was accepted and the null hypothesis (H_0) was rejected. These findings suggest that the *Wimmelbook* is an effective instructional medium for enhancing children's speaking ability through activities involving picture observation, discussion, and storytelling. Therefore, it can serve as an innovative alternative learning medium to support early childhood language development.

Suggestions

Kindergarten teachers are encouraged to integrate the *Wimmelbook* into classroom learning to promote children's speaking ability. Future studies should involve larger samples and explore the effectiveness of the *Wimmelbook* in developing other aspects of early childhood language skills.

ACKNOWLEDGMENTS

The authors would like to express their sincere gratitude to their academic supervisors for their invaluable guidance, encouragement, constructive feedback, and continuous support throughout the preparation and implementation of this study. The authors also extend their appreciation to the principal, teachers, and all children at Angkasa Lanud Padang Kindergarten for their permission, cooperation, and participation during the research process. Finally, the authors are grateful to everyone who contributed and provided support, making the successful completion of this study possible.

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