



The Effect of Wordwall Games on the Vocabulary Skills of Children Aged 5–6 Years

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ABSTRACT

This study aimed to determine the effect of Wordwall games on vocabulary skills. A quantitative approach with a one-group pretest-posttest design was employed, involving 16 children from Group B1. The subjects were children aged 5–6 years at RA Al-Ikhlas Birobuli, Palu City. Data were collected using a vocabulary skill test administered before and after eight sessions of Wordwall game interventions. The data were analyzed using descriptive statistics—specifically the mean, standard deviation, and maximum and minimum scores—as well as parametric inferential statistics, namely the paired-samples t-test. The results showed that the average vocabulary skill score increased from 12.62 to 27.38. Regarding performance categories, 87.5% of the children fell into the "Developing Very Well" category, while 12.5% fell into the "Developing as Expected" category. The paired-samples t-test yielded a significance value of 0.000 ($p < 0.05$), indicating that Wordwall games had a significant effect on the children's vocabulary skills. With an average score increase of 14.75 points, Wordwall proved to be an effective, interactive, and engaging learning medium for enhancing the vocabulary skills of early childhood learners.

Keywords: wordwall game, vocabulary skills, children

INTRODUCTION

Language proficiency—particularly vocabulary mastery—is a crucial developmental domain for young children, as it serves as the foundation for communicating, processing information, and expressing ideas and feelings. Hoerudin & Kartika (2023) state that a child's vocabulary determines their ability to articulate thoughts, understand teacher instructions, and interact with their social environment. The broader a child's vocabulary, the more refined their reasoning skills, ability to grasp learning material, and capacity to build social relationships become. Therefore, stimulating vocabulary development should begin as early as possible.

Ideally, by the age of 5–6, a child's language skills should have reached a more complex level. At this age, children are expected to understand simple commands, name objects in their surroundings, answer questions, express opinions, recount experiences, and use an increasingly diverse vocabulary in daily conversation. These milestones underscore the central role vocabulary plays in supporting a child's overall language development.

Research by Dini (2023) reveals that young children often face challenges in expressing ideas, selecting appropriate words, and using vocabulary within the correct context. Similarly, Kamaruddin

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(2026) found that language stimulation in early childhood education settings has not yet been fully optimized.

These findings are supported by preliminary observations conducted by the researcher at RA Al-Ikhlâs Birobuli in Palu City. The observations indicated that the vocabulary skills of children in Group B (aged 5–6) had not yet fully developed. Out of 16 children, only five were able to effectively use vocabulary related to the learning theme; another five struggled to name objects and express simple ideas; while the remaining six were unable to use vocabulary independently and still relied on teacher assistance during communication. This situation underscores the fact that children's vocabulary skills warrant specific attention within the learning process.

The low level of vocabulary attainment is believed to stem from several factors, including a teacher-centered instructional approach, a lack of diverse learning media, and a scarcity of play-based activities that actively engage the children. Teachers tend to rely heavily on lectures and verbal explanations, leaving children with limited opportunities to practice using vocabulary firsthand. Consequently, the learning environment becomes less engaging and meaningful, hindering optimal vocabulary development.

In light of these issues, there is a need for learning media capable of fostering an active, enjoyable atmosphere that aligns with the inherent nature of early childhood. One such option is Wordwall, a digital game-based learning tool offering a variety of interactive activities—such as word-image matching, quizzes, random wheel games, and word-building exercises.

Theoretically, the use of Wordwall is believed to boost children's vocabulary skills because it aligns with developmental characteristics; children grasp concepts more easily through images, colors, and concrete activities (Cuciatun et al., 2025). Furthermore, Wordwall provides multisensory stimulation—incorporating visual, auditory, and

kinesthetic elements—thereby making it easier for children to understand, retain, and meaningfully apply new vocabulary (Prastyo et al., 2024).

The use of Wordwall in language learning enables children to interact directly with the vocabulary being studied. Children do not merely listen to the teacher's explanations; they also observe images, articulate words, engage in matching tasks, and apply vocabulary through various game formats (Luh et al., 2021). Furthermore, Wordwall boosts children's learning motivation, concentration, and confidence in communication (Putra et al., 2024).

Research findings by Sarjani et al. (2023) reveal that Wordwall is effective in creating an interactive and engaging learning atmosphere, thereby enhancing children's understanding of the material taught. Silvia & Wirabrata (2021) also state that Wordwall helps children recognize vocabulary through visually appealing and easily digestible interfaces.

Thus, Wordwall is considered capable of enhancing children's vocabulary skills by offering game-based learning that simultaneously incorporates visual, auditory, and kinesthetic elements. This aligns with Piaget's view that young children grasp concepts more easily through concrete experiences and visual media, while Vygotsky posits that language development occurs through interaction and scaffolding. Activities such as matching images to words, arranging words, and repeating vocabulary within games make it easier for children to understand and remember words, as well as apply them in daily communication.

Based on this background, the researcher is interested in conducting a study titled "The Effect of Wordwall Games on the Vocabulary Skills of Children Aged 5–6 Years at RA Al-Ikhlâs Birobuli, Palu City, Central Sulawesi Province."

METHOD

This study was conducted at RA Al-Ikhlâs Birobuli, Palu City, Central Sulawesi Province. The



research subjects consisted of Group B, comprising 16 children (6 boys and 10 girls). The research process spanned one month, from April to May 2026, encompassing stages ranging from initial observation to the execution of the experiment.

This study employed a quantitative method with a pre-experimental approach, specifically utilizing the One-Group Pretest–Posttest Design. Prior to the intervention, the subject group underwent an initial test; subsequently, the group received the treatment, followed by a final test (posttest). By comparing the pretest and posttest results, the researcher was able to examine the impact of the applied treatment.

Data on vocabulary proficiency were collected using a test instrument developed through objective and systematic procedures. These procedures met the criteria for a valid test (Razak et al., 2020; Azwar, 2013).

The vocabulary proficiency data were analyzed using descriptive statistics, yielding the mean, standard deviation, and maximum and minimum scores. Additionally, parametric inferential statistics—specifically, the paired-sample t-test—were employed. All calculations were performed using SPSS version 20.

RESULTS

1. Data Normality Test

Before proceeding to the inferential statistical analysis stage, the researcher conducted a normality test. The results of the normality test are presented in the table below.

Table 2

Normality Test Results for Pre-test and Post-test Data							
Data	Kolmogorov-Smirnov			Shapiro-Wilk			Note
	Statistic	df	Sig.	Statistic	df	Sig.	
Pre-test	0,210	16	0,058	0,900	16	0,079	normal
Post-test	0,132	16	0,200*	0,936	16	0,305	normal

The Kolmogorov-Smirnov test yielded significance values of 0.058 for the pre-test data and 0.200 for the post-test data, both of which exceed the 0.05 threshold. Similar results were observed in the Shapiro-Wilk test, with significance values of 0.079 for the pre-test data and 0.305 for the post-test data, both surpassing the 0.05 limit. Given that both normality tests yielded consistent conclusions, the data can be considered normal.

Table 3

Summary of Descriptive Statistics for Pre-test and Post-test Data						
Data	N	Minimum	Maximum	Mean	Std. Deviation	Category
Pretest	16	10	15	12,62	1,668	starting to develop
Posttest	16	24	30	27,38	1,857	developing very well

Among the 16 children studied, pre-test scores ranged from a low of 10 to a high of 15, with a mean of 12.62 and a standard deviation of 1.668. These figures indicate that, prior to the intervention, the children's vocabulary skills generally fell within the "Beginning to Develop" category, with variations in performance observed among the group. Meanwhile, post-test results showed a score range of 24 to

30, with a mean of 27.38 and a standard deviation of 1.857. Compared to the pre-test results, there was a mean increase of 14.75 points. Although the standard deviation for the post-test (1.857) was slightly higher than that of the pre-test (1.668), the data overall confirm a significant improvement in the children's vocabulary skills following the intervention.

2. Results of the Children's Vocabulary Skill Pre-test

The pre-test was conducted prior to the administration of the intervention involving Wordwall games. Measurement was carried out through direct observation using a checklist instrument comprising eight vocabulary skill indicators.

Table 2
Children's Vocabulary Skill Pre-test Scores

No.	Subject Initials	Score	Category
1	Child 1	11	Beginning to Develop
2	Child 2	13	Beginning to Develop
3	Child 3	14	Beginning to Develop
4	Child 4	11	Beginning to Develop
5	Child 5	13	Beginning to Develop
6	Child 6	14	Beginning to Develop
7	Child 7	11	Beginning to Develop
8	Child 8	13	Beginning to Develop
9	Child 9	10	Beginning to Develop
10	Child 10	11	Beginning to Develop
11	Child 11	15	Beginning to Develop
12	Child 12	11	Beginning to Develop
13	Child 13	12	Beginning to Develop
14	Child 14	13	Beginning to Develop
15	Child 15	15	Beginning to Develop
16	Child 16	15	Beginning to Develop
	Mean	12.62	Beginning to Develop

Based on the pre-test results in Table 4.3, it is evident that the children's vocabulary skills prior to the intervention fell into the "Beginning to Develop" category. Among the 16 students participating in the study, all obtained scores ranging from 10 to 15, with a mean score of 12.62.

During the pre-test, most children were able to recognize some of the vocabulary introduced by the teacher; however, they still struggled when asked to recall object names, match images with the corresponding vocabulary, or articulate words clearly. Furthermore, some children required teacher assistance or guidance to answer questions and complete assigned tasks. These conditions indicate that the children's vocabulary mastery remained limited, hindering the full development of their oral communication skills. Instruction that did not utilize interactive digital media resulted in lower motivation among some children to participate actively in learning activities, thereby limiting their opportunities to expand their vocabulary.

Overall, the pre-test results indicate that the vocabulary skills of the children in Group B1 at RA Al-Ikhlas Birobuli were still at an early stage of development. Consequently, an intervention was required in the form of instruction utilizing Wordwall games as an interactive digital learning medium.

3. Post-test Results of Children's Vocabulary Skills

Following the completion of the full series of interventions using Wordwall games, a post-test was conducted. The instrument used for the post-test was identical to that of the pre-test: an observation checklist comprising eight indicators of vocabulary proficiency. The post-test data are presented below.

Table 3

Post-test Scores for Children's Vocabulary Skills

No.	Subject Initials	Score	Category
1	Child 1	24	Developing as expected
2	Child 2	24	Developing as expected
3	Child 3	26	Developing as expected
4	Child 4	27	Developing as expected
5	Child 5	29	Developing as expected
6	Child 6	27	Developing as expected
7	Child 7	26	Developing as expected
8	Child 8	29	Developing as expected
9	Child 9	27	Developing as expected
10	Child 10	30	Developing as expected
11	Child 11	29	Developing as expected
12	Child 12	28	Developing as expected
13	Child 13	26	Developing as expected
14	Child 14	28	Developing as expected
15	Child 15	28	Developing as expected
16	Child 16	30	Developing as expected
	Mean	27.38	Developing as expected

Based on the post-test results in Table 5, it is evident that the children's vocabulary skills improved compared to their condition prior to the intervention. Of the 16 children participating in the study, 2 fell into the "Developing as Expected" category, while 14 had reached the "Developing Very Well" category. The mean post-test score was 27.38, indicating that, overall, the children's vocabulary skills developed very well after participating in lessons using Wordwall games.

During the post-test, most children were able to recognize and name vocabulary related to the school environment without requiring assistance from the researcher. The children were also able to match images with the corresponding vocabulary, recognize the initial letter of a word, arrange letters to form correct words, and explain the simple functions of the objects displayed. Furthermore, the children appeared more confident when answering questions and expressing their opinions in front of their peers.

The improvement in vocabulary skills was evident in the children's enthusiasm and active participation throughout the learning process. Presenting the material through interactive games helped the children stay focused and motivated, and encouraged them to attempt answering the questions posed.

Overall, post-test results indicate that the vocabulary skills of the Group B1 children at RA Al-Ikhlas Birobuli improved significantly after participating in lessons utilizing Wordwall games. These findings suggest that Wordwall games are an effective digital learning tool for enhancing the vocabulary skills of children aged 5–6 years.

4. Comparison of Pre-test and Post-test Results

To provide an overview of the children's overall vocabulary skill improvement, a comparison between the pre-test and post-test data is presented below in a comprehensive table.

Table 6
Comparison of Pre-test and Post-test Scores by Subject

No.	Subject	Pre-test Score	Post-test Score	Gain Score	Improvement (%)
1	Child 1	11	24	13	61.9%
2	Child 2	13	24	11	57.9%
3	Child 3	14	26	12	66.7%
4	Child 4	11	27	16	76.2%
5	Child 5	13	29	16	84.2%
6	Child 6	14	27	13	72.2%
7	Child 7	11	26	15	71.4%
8	Child 8	13	29	16	84.2%
9	Child 9	10	27	17	77.3%
10	Child 10	11	30	19	90.5%
11	Child 11	15	29	14	82.4%
12	Child 12	11	28	17	81.0%
13	Child 13	12	26	14	70.0%
14	Child 14	13	28	15	78.9%
15	Child 15	15	28	13	76.5%
16	Child 16	15	30	15	88.2%
Mean		12.62	27.38	14.75	76.2%

Based on the table above, all students showed an increase in scores on the post-test compared to the pre-test results. Not a single child experienced a decline or obtained a score identical to the result prior to the intervention. This indicates that instruction utilizing Wordwall games brings about a positive change in the children's vocabulary skills.

Overall, the children's average vocabulary score rose from 12.62 in the pre-test to 27.38 in the post-test. Consequently, the average gain score achieved was 14.75, representing an increase of 76.2%. These results demonstrate a substantial improvement in the children's vocabulary skills following instruction that incorporated Wordwall games.

When examining the progress of individual students, all children showed development in their vocabulary skills, albeit with varying degrees of improvement. The greatest improvement was observed in Child 10, who achieved a score increase of 19 points (90.5%), while the smallest improvement was seen in Child 2, with an increase of 11 points (57.9%). Nevertheless, every child demonstrated improved ability following the intervention, indicating that Wordwall games had a consistently positive impact on all students.



5. Paired Sample t-Test

Subsequently, an inferential statistical analysis was conducted using a paired sample t-test. The testing criterion was that the null hypothesis (H_0) would be rejected if the Sig. (2-tailed) value was less than 0.05, indicating a significant difference in the children's vocabulary skills before and after the intervention.

The paired sample t-test yielded a calculated t-value of 28.343 with a significance level of 0.000. Meanwhile, the t-table value was recorded at 2.131. Since the calculated t-value (28.343) was significantly higher than the t-table value (2.131) and the Sig. value (0.000) was less than 0.05, the decision was made to reject H_0 and accept H_1 . These findings confirm that Wordwall games have a significant influence on the vocabulary skills of children aged 5–6 years at RA Al-Ikhlas Birobuli, Palu City, Central Sulawesi Province. Evidence of this is seen in the average post-test score (27.38), which significantly exceeds the average pre-test score (12.62), with a difference of 14.75 points.

DISCUSSION

The sharp rise in scores observed over the course of seven sessions suggests that repetition played a significant role. Children did not encounter a vocabulary item just once; instead, they encountered it repeatedly through various game formats. Consequently, the same word was reinforced through multiple memory pathways—visual, auditory, and practical application. This dynamic likely explains why nearly all children in the study showed consistent progress, regardless of their varying proficiency levels at the pre-test stage. As noted by Hasibuan et al. (2024), young children find it easier to grasp concrete vocabulary related to objects or events that can be directly seen and experienced. Wordwall, by presenting concrete images linked to words, optimally meets these learning needs.

Beyond the cognitive aspects of the intervention, the children took turns interacting

with the Wordwall platform, fostering active social interaction among them. They learned to wait for their turns, encourage their peers, and share their learning experiences. As stated by Khadijah and Armila (Fitria et al., 2022), play can develop a child's potential holistically, encompassing social, emotional, and personality traits.

The element of repetition inherent in Wordwall games also contributed to the study's success. Through varied activities that utilized the same vocabulary in different contexts, the children became increasingly familiar with the words and grasped their meanings. Nurma (2024) explains that repetition is a crucial factor in early childhood vocabulary acquisition, and Wordwall provides children with the opportunity to review previously learned vocabulary in an enjoyable way.

The findings of this study align with a number of previous studies. Ballqis (2024), through her research at Mutiara Al-Madani Islamic Kindergarten, found that the use of Wordwall could boost children's language skills, introduce letter symbols, build an understanding of sound-letter relationships, and enrich the vocabulary of early childhood learners. These results align with the findings of the current study, which confirm that Wordwall is effective in enhancing early childhood vocabulary skills across the various indicators examined.

Furthermore, research by Sarah Emmanuel Hariyono et al. (2025)—which developed interactive, game-based letter media for Group B children—also found that such media could improve letter recognition, word formation, and vocabulary mastery in an enjoyable way. These findings further reinforce the conclusion of the present study: that digital game-based approaches are powerful strategies for fostering language skills—specifically vocabulary—in early childhood.

CONCLUSION

Based on the findings and discussion presented, this study concludes that the implementation of Wordwall games has a significant impact on the vocabulary skills of early childhood learners at RA Al-Ikhlas Birobuli, Palu City, Central Sulawesi Province. This impact is evidenced by the improvement in children's vocabulary skills following eight learning sessions using Wordwall; the average vocabulary score rose from 12.62 in the pre-test to 27.38 in the post-test, reflecting an increase of 14.75 points. Moreover, among the total research subjects, 14 children (87.5%) successfully reached the "Developing Very Well" category, while 2 children (12.5%) fell into the "Developing as Expected" category. Statistical analysis using a paired-sample t-test supports this conclusion, yielding a calculated t-value of 28.343 and a significance level (Sig. 2-tailed) of 0.000—well below the established threshold of 0.05. Consequently, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted. Based on these findings, it can be stated that Wordwall is a learning medium proven to boost the vocabulary skills of children aged 5–6 years at RA Al-Ikhlas Birobuli, Palu City, Central Sulawesi Province.

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