

CHAPTER IV

DATA PRESENTATION AND DATA ANALYSIS

A. Research Result

Researchers presented data using observation, test, and documentation methods. To gather information in the field, a Pre-Test was administered to assess the vocabulary development of students prior to the implementation of the treatment. Data collection involved 44 second grade students from SDN 50 Bengkalis, with 22 students in class 2A and 22 students in class 2B.

1. Data of pre-test

After collecting data from the students, the researcher presented data of pre-test as follow :

TABLE IV. 1
The Classification of Pre-Test Scores of
Class 2A
Students Experiment Class

Score	Level of students' vocabulary mastery	Frequency	Percentage
86-100	Excellent	0	0.0%
71-85	Good	1	4.5%
56-70	Fair	7	31.8%
41-55	Poor	10	45.5%
< 40	Very Poor	4	18.2%
Total		22	100.0%

Based on the table of vocabulary scores from 22 students, their performance was classified into five levels : Excellent, Good, Fair, Poor, Very

Poor. The data shows that no one students achieved the Excellent level, indicating that none demonstrated full mastery of vocabulary. Only 1 students (4.5%) was categorized as Good level, reflecting a moderate level of understanding. 7 students (31.8%) were classified as Fair, showing basic but limited vocabulary skills. Meanwhile, 10 students (45.5%) were in the Poor category, and 4 students (18.2%) fell into the Very Poor Category. This means that more than half of the students (63.7%) had serious difficulties in vocabulary mastery. Overall these results suggest the need for additional support and focused vocabulary instruction to improve students' language proficiency.

TABLE IV. 2
The Classification of Pre-Test Scores of
Class 2B Students
Control Class

Score	Level of students' vocabulary mastery	Frequency	Percentage
86-100	Excellent	0	0.0%
71-85	Good	2	9.1%
56-70	Fair	5	22.7%
41-55	Poor	8	36.4%
< 40	Very Poor	7	31.8%
Total		22	100.0%

Based on the table of students' vocabulary scores, which were classified into five mastery levels, most of the students were categorized at the Poor level, with 8 students (36.4%), indicating low vocabulary mastery and

limited understanding of word usage. In addition, 7 students (31.8%) were classified as Very Poor, showing serious difficulties in vocabulary comprehension. Meanwhile, 5 students (22.7%) reached the Fair level, reflecting basic vocabulary ability. Only 2 students (9.1%) were categorized as Good, suggesting an adequate understanding of vocabulary, while no students achieved the Excellent level. Overall, the findings reveal that the majority of students still had difficulties in mastering vocabulary, as 68.2% of them were included in the Poor and Very Poor categories. These results indicate the need for more effective vocabulary instruction and additional learning support to improve students' vocabulary achievement.

2. Data of post-test

TABLE IV. 3
The Classification of Post-Test Scores of
Class 2A
Students Experiment Class

Score	Level of students' vocabulary mastery	Frequency	Percentage
86-100	Excellent	5	22.7%
71-85	Good	9	40.9%
56-70	Fair	7	31.8%
41-55	Poor	1	4.5%
< 40	Very Poor	0	0%
Total		22	100.0%

Based on the distribution of students' vocabulary mastery levels, the majority of students showed good performance in vocabulary achievement. A total of 9 students (40.9%) were categorized at the Good level, indicating that

many students had a satisfactory understanding of vocabulary. In addition, 5 students (22.7%) achieved the Excellent level, demonstrating strong vocabulary mastery. Meanwhile, 7 students (31.8%) were classified as Fair, reflecting moderate vocabulary proficiency. Only 1 student (4.5%) fell into the Poor category, and none of the students were categorized as Very Poor. Overall, these findings show that most students had adequate to high vocabulary knowledge, although a small number of students still experienced limitations in vocabulary mastery.

TABLE IV. 4
The Classification of Post-Test Scores of
Class 2B
Students Control Class

Score	Level of students' vocabulary mastery	Frequency	Percentage
86-100	Excellent	2	9.1%
71-85	Good	2	9.1%
56-70	Fair	13	59.1%
41-55	Poor	4	18.2%
< 40	Very Poor	1	4.5%
Total		22	100.0%

Based on the table of students' vocabulary mastery levels, most students were classified in the Fair category, with 13 students (59.1%), indicating an average level of vocabulary understanding and usage. Furthermore, 2 students (9.1%) achieved the Excellent level, while another 2 students (9.1%) were categorized as Good, showing that only a few students demonstrated high vocabulary proficiency. In addition, 4 students (18.2%)

were placed in the Poor category, reflecting limited vocabulary knowledge. Meanwhile, 1 student (4.5%) fell into the Very Poor category, indicating serious difficulties in vocabulary mastery. Overall, the distribution shows that the majority of students had moderate vocabulary ability, although some students still experienced difficulties and required further improvement in their vocabulary skills.

B. Data Analysis

1. Validity Test

The purpose of validity evaluation was to determine how well the test instrument could gauge students' proficiency with English vocabulary. With the use SPSS 2025 software, researchers collected 20 objective questions for this study, which were then assessed for validity.

TABLE IV. 5

The Result of Validity Test

No	R value	R table	Description
1	0,550	0,444	Valid
2	0,751	0,444	Valid
3	0,709	0,444	Valid
4	0,468	0,444	Valid
5	0,628	0,444	Valid
6	0,675	0,444	Valid
7	0,513	0,444	Valid
8	0,575	0,444	Valid
9	0,559	0,444	Valid
10	0,556	0,444	Valid
11	0,472	0,444	Valid
12	0,444	0,444	Valid
13	0,495	0,444	Valid
14	0,554	0,444	Valid
15	0,575	0,444	Valid
16	0,450	0,444	Valid

17	0,531	0,444	Valid
18	0,582	0,444	Valid
19	0,490	0,444	Valid
20	0,581	0,444	Valid

The validity test was conducted to determine whether the items in the research instrument are appropriate for use. The results showed that all 20 items had correlation coefficients (R value) greater than the R table value (0,444), ranging from 0,444 to 0,751. Therefore, all items are considered valid and can be use to measure students' vocabulary ability. This study focuses on the use of wordwall application as a medium to improve vocabulary mastery among second grade students at SDN 50 Bengkalis. The validity of this instrument ensures that the tool used is appropriate for observing such improvement.

2. Reliability Test

Reliability in other terms, signifies the steadiness of the measurement tool employed and its uniformity over a period.

TABLE IV. 6

Reliability Statistic Table

Reliability Statistic

Cronbach's Alpha	N of Items
.749	21

Based on the SPSS output in the Reliability Statistic table, the Cronbach's Alpha value obtained is 0.749 for the 20 test items. This value indicates that the vocabulary test instrument used in this study has a good level of reliability. In educational research, a Cronbach's Alpha value above 0.7 is considered reliable, meaning that the instrument is consistent and trustworthy in measuring students' vocabulary mastery. Therefore, the test items used in the pre-test and post-test are appropriate to be used as measurement tools in this study.

3. Descriptive statistic

An summary of the data gathered from the pre-test and post-test is given using descriptive statistics. The mean, standard deviation, and lowest and maximum values are all included in the data analysis.

TABLE IV. 7
Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pretestexperiment	22	25	75	51,14	12,624
posttestexperiment	22	55	100	77,73	12,792
pretestcontrol	22	30	75	50,23	13,756
posttestcontrol	22	40	95	65,68	13,120
Valid N (listwise)	22				

Based on the Descriptive Statistics output, it can be seen that the mean pre-test score in the experimental group was 51.14, which increased to 77.73 in the post-test, with standard deviations of 12.624 and 12.792, respectively. Meanwhile, in the control group, the mean pre-test score was

50.23, increasing to 65.68 in the post-test, with standard deviations of 13.756 and 13.120. These findings show that both groups experienced improvement in vocabulary scores after the treatment. However, the experimental group showed a greater increase compared to the control group, indicating that the use of the Wordwall application had a positive effect on students' vocabulary mastery in this study.

4. Normality Test

The normality test is conducted to determine whether the data from the pre-test and post-test are normally distributed⁶⁴.

- 1) If $p > 0.05$, the data is deemed normally distributed, which permits the application of the t-test.
- 2) If $p < 0.05$, the data does not conform to a normal distribution, indicating that non-parametric tests should be utilized

TABLE IV. 8

Normality Test

Tests of Normality							
	class	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
score	pretest experiment	,132	22	,200 [*]	,964	22	,581
	posttest experiment	,157	22	,170	,952	22	,343
	pretest control	,093	22	,200 [*]	,952	22	,348
	posttest control	,203	22	,019	,919	22	,072

⁶⁴ Ig. Dodiet Aditya Setyawan, *Buku Petunjuk Praktikum: Uji Normalitas dan Homogenitas Data dengan SPSS* (Surakarta: Politeknik Kesehatan Kementerian Kesehatan Surakarta, 2021), p. 5.

Based on the results of the Shapiro-Wilk normality test, the significance values of the pre-test experiment group (0.581), post-test experimental group (0.343), pre-test control group (0.348), and post-test control group (0.072) were all higher than 0.05. These findings show that data in each group were distributed normally. As a result, the assumption of normality was satisfied, which means the data were suitable for further analysis using parametric statistical tests, including the paired samples t-test and the independent sample t-test in this research.

5. Homogeneity Test

The homogeneity test is conducted to examine whether the data variances between groups are equal⁶⁵.

- a. If $p > 0.05$, the variances of both groups are regarded as homogeneous, which permits the application of the t-test.
- b. If $p < 0.05$, the variances are deemed non-homogeneous, indicating that alternative testing methods should be explored.

⁶⁵ Ig. Dodiet Aditya Setyawan, *Buku Petunjuk Praktikum: Uji Normalitas dan Homogenitas Data dengan SPSS* (Surakarta: Politeknik Kesehatan Kementerian Kesehatan Surakarta, 2021), p. 14.

TABLE IV. 9
Homogeneity Test

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
SCORE	Based on Mean	,189	1	42	,666
	Based on Median	,184	1	42	,670
	Based on Median and with adjusted df	,184	1	40,842	,670
	Based on trimmed mean	,219	1	42	,642

Based on the Test of Homogeneity of Variances table, the homogeneity analysis was conducted using Levene's Test. The significance value obtained from the test based on the mean was 0.666. Since the significance value was greater than 0.05 ($0.666 > 0.05$), the variance of the experimental group and the control group was considered homogeneous.

This result indicates that the two groups had similar variances. Therefore, the assumption of homogeneity was fulfilled, meaning that the data were suitable for further analysis using parametric statistical tests, especially the independent samples t-test in this reasearch.

6. T-test

a. Paired Sample T-test

TABLE IV. 10
Paired Sample Test

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
			Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	preexperiment - postexperiment	-26,591	13,308	2,837	-32,491	-20,690	-9,372	21	,000

Based on the results of the Paired Sample T-Test, there was a statistically significant difference between the pre-test and post-test scores in the experimental group. The mean difference was -26.591, indicating that the students' scores after the treatment were significantly higher than before the treatment. The standard deviation of the scores differences was 13.308, while the standard error mean was 2.837. The 95% confidence interval for the mean difference ranged from -32.491 to -20.690, which did not include zero. In addition, the t-value was -9.372 with 21 degrees of freedom, and the significance value (2-tailed) was 0.000, which was lower than 0.05. Therefore, it can be concluded that the difference between pre-test and post-test scores was statistically significant, indicating that the use of the Wordwall Application had a meaningful effective on students' vocabulary mastery.

b. Independent Sample T-Test

TABLE IV. 11
Independent Sample Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SCORE	Equal variances assumed	,189	,666	3,083	42	,004	12,045	3,907	4,161	19,929
	Equal variances not assumed			3,083	41,973	,004	12,045	3,907	4,161	19,930

Based on the results of the Independent Samples T-Test, the significance value from Levene's Test for Equality of Variances was 0.666, which is higher than 0.05. This indicates that the assumption of equal variances is satisfied; therefore, the row labeled "Equal variances assumed" was used for the interpretation. The t-test result showed a t-value of 3.083 with 42 degrees of freedom and a significance (2-tailed)

value of 0.004, which is lower than 0.05. Since the significance (2-tailed) value of 0.004 was lower than 0.05, the Null Hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. This indicates that there was a statistically significant difference between the scores of the experimental group and the control group. In addition, the mean difference was 12.045 with a standard error of 3.907, and the 95% confidence interval ranged from 4.161 to 19.929, which does not include zero. Therefore, it can be concluded that there was a significant difference between the two groups in terms of their mean scores. Based on the findings, it can be concluded that the use of the Wordwall Application had a significant effect on students' vocabulary mastery at SDN 50 Bengkalis.

C. Discussion

The result of the hypothesis testing showed that there was a significant difference between the students who were taught by using the Wordwall application and those who were taught by using the conventional method. The students in the experimental class obtained higher scores than those in the control class. Therefore, it can be concluded that the use of the Wordwall application was effective in improving students' vocabulary mastery.

The effectiveness of the Wordwall application may be influenced by several factors. The interactive and game-based features of Wordwall increased students' motivation and interest in learning vocabulary. In addition, the application encouraged students to participate actively during the learning process because they were directly involved in answering questions and

completing activities. Wordwall also provided immediate feedback, allowing students to identify and correct their mistakes directly. Furthermore, the application was considered time-effective because the teacher could present materials, conduct exercises, and evaluate students' performance more efficiently through its automatic scoring feature. During the implementation of the application, the students also showed positive responses and enthusiasm toward the learning activities. These factors might explain why the experimental class achieved better vocabulary mastery than the control class.

