CHAPTER IV

FINDING AND DISCUSSION

This chapter presents the analysis of data from the pre-test and post-test scores of both the experimental and control groups. The findings include the results of the pre- and post-tests, tests for normality and homogeneity, and the verification of ANCOVA assumptions. These results provide scientific evidence of the effectiveness of the WordUp application towards students' vocabulary mastery at SMAN 6 Kediri.

A. Research Finding

This section presents the pre-test and post-test data collected from two different classes. The researcher provides the results for both the experimental and control groups. The pre-test was conducted before the treatment, while the post-test was administered after the treatment. In both tests, students were given 30 questions to answer. The purpose of this study is to evaluate how effectively WordUp supports vocabulary mastery among tenth-grade students at SMAN 6 Kediri.

This section presents the results of students' vocabulary learning outcomes, comparing those taught using WordUp with those taught using a printed dictionary. To analyze these results, the researcher used a statistical t-test with a 5% level of significance, conducted through SPSS version 23, based on the data from the pre-test and post-test.

1. Data Description

The findings from the pre-test and post-test results of both the Experimental and Control classes are presented below.

1. The Result of Pre-Test

The data for this study were collected from the pre- and post-test results of the experimental class at SMAN 6 Kediri. Before receiving treatment from the researcher, both the experimental and control groups took a pre-test to assess their initial knowledge of basic vocabulary. Both the pre-test and post-test were comprised of multiple-choice questions that the students responded to.

The researcher obtained the test results by multiplying the number of correct answers by 3,33. Descriptive statistics were used in SPSS to analyze the pre-test data. The descriptive statistics include the sample size, mean score, maximum and minimum scores, and standard deviation. The full pre-test scores for both the experimental and control groups are provided in the appendix. A summary of the pre-test results for both groups is presented in Table 4.1 below:

Table 4.1

The Result of Pre-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test Experiment	30	50	90	70.60	11.637
Pre-test Control	30	43	76	58.70	7.401
Valid N (listwise)	30				

Table 4.1 shows that the number of students in both the experimental and control classes was the same, with students in each

class. Based on the table, the highest pre-test score in the experimental class was 90, while in the control class it was 76. The lowest pre-test score in the experimental class was 50, compared to 43 in the control class. The mean pre-test score for the experimental class was 70.60, while the control class had a mean score of 58.70. The standard deviation of the pre-test scores was 11.637 for the experimental class and 7.401 for the control class.

The experimental class was chosen based on purposive sampling, not randomly. The school and the English teacher recommended this class because the students were more accustomed to using digital-based learning applications and had better access to smartphones and internet connectivity, which are essential for optimal use of the WordUp application. Although their pre-test scores were higher, the focus of this study was not merely on the final outcome, but on the degree of improvement in vocabulary mastery from the pre-test to the post-test as a result of using the WordUp application. Furthermore, ANCOVA was used in the analysis to control for initial score differences (pre-test), ensuring that the post-test results could be compared fairly and statistically objectively. Therefore, the selection of the experimental group was based on practical and pedagogical considerations, while the analytical method ensured the validity and reliability of the results.

2. The Result of Post-Test

After the treatment was given, a post-test was conducted for both the experimental and control classes. This test aimed to evaluate how well the students had learned vocabulary. The main goal of this study is to compare students' vocabulary mastery before and after the treatment. The post-test was used to assess the students' vocabulary knowledge, specifically in the context of Report Text, following the treatment provided by the researcher.

The researcher obtained the test results by multiplying the number of correct answers by 3,33. Descriptive statistics were used in SPSS to analyze the post-test data. The descriptive statistics include the sample size, mean score, maximum and minimum scores, and standard deviation. The full post-test scores for both the experimental and control groups are provided in the appendix. A summary of the post-test results for both groups is presented in Table 4.2 below:

Table 4.2

The Result of Post-test

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Post-test Experiment	30	63	100	84.23	11.941
Post-test Control	30	57	80	67.20	6.965
Valid N (listwise)	30				

Table 4.2 shows that the number of students in both the experimental and control classes was the same, with students in each class. Based on the table, the highest post-test score in the experimental class was 100, while in the control class it was 80. The lowest post-test

score in the experimental class was 63, compared to 57 in the control class. The mean post-test score for the experimental class was 84.23, while the control class had a mean score of 67.20. The standard deviation of the post-test scores was 11.941 for the experimental class and 6.965 for the control class.

Based on the differences in students' scores, it can be observed that there is an improvement in their English learning outcomes. This suggests that students in the class without the use of the WordUp application still face difficulties in meeting the minimum passing criteria. In general, the comparison of scores in Table 4.1 and Table 4.2 shows that using the WordUp application has a positive impact on students' vocabulary acquisition.

2. Fulfilment of the ANCOVA Assumptions

Before conducting data analysis, it is important to ensure that the assumptions required for each analysis technique are met. ANCOVA has four main assumptions: Normality, Homogeneity Variances, Homogeneity Regression, and a Linear Relationship between the Covariate and the Dependent Variable. Once all these assumptions are satisfied, the ANCOVA method can be used to test the research hypotheses.

1. Normal Distribution

In this section, the normality of the data distribution was tested. The Kolmogorov-Smirnov test was applied to check whether the data met the assumption of normality. A significance value (p) greater than 0.05 indicates that the data are normally distributed. On the other hand,

if the significance value (p) is less than 0.05, it suggests that the data do not follow a normal distribution. The results of this test are presented in Table 4.3.

Table 4.3

The Result of Normality Test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	kelas	Statistic	df	Sig.	Statistic	df	Sig.
Student's Result	Pre-test Experiment	.137	30	.155	.969	30	.523
	Post-test Experiment	.111	30	.200*	.949	30	.160
	Pre-test Control	.123	30	.200*	.949	30	.159
	Post-test Control	.127	30	.200*	.927	30	.041

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 4.3 presents the Kolmogorov-Smirnov significance values for the pre-test and post-test in both the experimental and control classes. The significance value for the pre-test in the experimental class was 0.155 (p>α 0.05), and in the control class, it was 0.200 (p>α 0.05). Similarly, the significance value for the post-test was 0.200 (p>α 0.05) in the experimental class and 0.200 (p>α 0.05) in the control class. Based on these results, it can be concluded that the data are normally distributed.

2. Homogeneity Variances

Homogeneity test is used to determine whether the sample obtained from the population in this study had same variances or not. Levene's test was applied to measure the variance between the two classes. If the result is greater than 0.05, it indicates that the data variances between the two classes are homogeneous. However, if the

result is less than 0.05, it shows that the data variances are not homogeneous. The results of the homogeneity test are presented in Table 4.4.

Table 4.4

The result of Homogeneity Test

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Nilai Posttest

F	df1	df2	Sig.
1.339	1	58	.252

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Kelas + Pretest + Kelas *Pretest

Table 4.4 shows that the variances of the experimental and control groups were homogeneous. This is supported by the result of the Levene test, which indicates homogeneity when the significance value is higher than 0.05. In this case, the significance value was 0.252, meaning that the variances in both the experimental and control groups were consistently homogeneous.

3. Homogeneity Regression

The purpose of conducting a homogeneity of regression test is to examine whether there is an interaction between the covariate and the independent variable in predicting the dependent variable. When using ANCOVA to analyze data, there should be no significant interaction between the covariate and the independent variable ($p > 0.05$). The results of the homogeneity of regression test are presented in Table 4.5.

Table 4.5

The Result of homogeneity regression

Descriptive Statistics

Tests of Between-Subjects Effects

Dependent Variable: Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8919.486[a]	3	2973.162	170.819	.000
Intercept	409.993	1	409.993	23.556	.000
Class	5.727	1	5.727	.329	.569
Pretest	3424.305	1	3424.305	196.739	.000
Class * Pretest	**33.700**	**1**	**33.700**	**1.936**	**.170**
Error	974.698	56	17.405		
Total	353875.000	60			
Corrected Total	9894.183	59			

a. R Squared = .901 (Adjusted R Squared = .896)

Based on Table 4.5, the significance value of the regression was 0.170, which was higher than 0.05. This result indicates that there was no significant interaction between the covariate (pre-test) and the independent variable (WordUp).

4. Linear Relationship between Covariate and Dependent Variable

The final assumption concerns the relationship between the covariate (pre-test) and the dependent variable (post-test). The purpose of the covariate test is to examine whether there is a relationship between the covariate and the dependent variable while controlling for the independent variable (across different groups). A significance value of ($p < \alpha$ 0.05) is considered acceptable. The results of the test for the linear relationship between the covariate and the dependent variable are presented in Table 4.6.

Table 4.6

The Result of Linear Relationship between Covariate and Dependent Variable

Tests of Between-Subjects Effects

Dependent Variable: Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8885.785[a]	2	4442.893	251.136	.000
Intercept	377.657	1	377.657	21.347	.000
Pretest	**4533.769**	**1**	**4533.769**	**256.273**	**.000**
Class	422.245	1	422.245	23.868	.000
Error	1008.398	57	17.691		
Total	353875.000	60			
Corrected Total	9894.183	59			

a. R Squared = .898 (Adjusted R Squared = .895)

Based on the table above, it can be observed that the Sig. value of the Pretest is 0.000, which is less than 0.05 (0.000 < 0.05). This indicates that there is a significant linear relationship between the covariate and the dependent variable. Therefore, it can be concluded that the covariate has a linear relationship with the dependent variable.

3. The Result of ANCOVA

In this step, the hypothesis is tested by using the test of between-subject effects to find out whether the treatment has an impact on students' vocabulary mastery when using the WordUp application. The following is the researcher's hypothesis:

a. Alternative Hypothesis (Ha): The use of the WordUp application results in differences in students' vocabulary acquisition if the Sig. value < a (0.05). This indicates that the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted. Therefore, it

can be concluded that the WordUp application is effective in improving students' vocabulary acquisition. This is evidenced by a significant difference between the experimental and control groups.

b. Null Hypothesis (H0): If the Sig. value > a (0.05), then there is no differences in students' vocabulary acquisition due to the WordUp application, meaning the null hypothesis (H0) is accepted and the alternative hypothesis (Ha) is rejected. This implies that the use of the WordUp application is not effective in improving students' vocabulary acquisition. This conclusion is supported by the insignificant difference in scores between the experimental and control groups.

Table 4.7

The Result of ANCOVA

Tests of Between-Subjects Effects

Dependent Variable: Nilai Post-test

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8885.785[a]	2	4442.893	251.136	.000
Intercept	377.657	1	377.657	21.347	.000
Pretest	4533.769	1	4533.769	256.273	.000
Class	**422.245**	**1**	**422.245**	**23.868**	**.000**
Error	1008.398	57	17.691		
Total	353875.000	60			
Corrected Total	9894.183	59			

a. R Squared = .898 (Adjusted R Squared = .895)

Based on the results in Table 4.7, the significance value for the group is 0.000, which is less than 0.05 (0.000 < 0.05). This means that the null hypothesis (Ho) is rejected, and the alternative hypothesis (Ha) is accepted. Therefore, it can be concluded that using the WordUp application is effective in improving students' vocabulary mastery. The

WordUp app supports students in learning and mastering new vocabulary. In conclusion, students who utilized the WordUp application demonstrated a higher level of vocabulary mastery compared to those who used a printed dictionary.

B. Discussion

The results of the study indicate that the use of the WordUp application significantly enhances vocabulary mastery among tenth-grade students at SMAN 6 Kediri. This finding aligns with the proposed hypothesis, where students using the WordUp application demonstrated a greater improvement in vocabulary scores compared to those using a printed dictionary. The average post-test score for students in the experimental group reached 84.23, while the control group only achieved 67.20. This difference suggests that the WordUp application is effective in supporting vocabulary learning.

One contributing factor to the success of the WordUp application is its interactive and adaptive learning approach. The audio-visual features and educational games within the application engage students and motivate them to learn new vocabulary. This is consistent with research by Godwin-Jones (2018), which states that digital learning applications can enhance student motivation and engagement, ultimately contributing to better learning outcomes.

Additionally, the WordUp application allows students to learn independently outside of school hours. By providing opportunities for students to expand their vocabulary at their own pace and according to their individual needs, the application supports the principle of autonomous learning, which is

crucial in language acquisition. Research by Rafiq et al. (2024) also indicates that the use of technology in education can facilitate monitoring student progress and provide constructive feedback, which is essential for improving their learning process.

However, despite the positive results indicating the effectiveness of the WordUp application, there are several challenges that need to be addressed. One challenge is the potential digital divide among students. Not all students have equal access to smartphones or stable internet connections, which may affect their ability to fully utilize the application. Therefore, it is important for schools to provide support in terms of digital facilities to ensure that all students can access the application easily.

Another challenge faced is the consistency of application usage among students. Although WordUp offers daily practice features, some students may not fully utilize these features outside of class hours. This highlights the need for motivational strategies from teachers to encourage students to maintain regular practice, which is vital for vocabulary retention.

The findings of this study are supported by several previous studies that highlight the effectiveness of mobile applications in enhancing vocabulary mastery. The first study by Maenza and Gajic (2020) shows that the WordUp application has a positive impact on vocabulary development among university students. The second study by Nushi, Aghaei, and Roshanbin (2021) emphasizes how this application helps students learn new words through authentic examples. The third study by Idasari and Maknun (2021) demonstrates that the WordUp application is effective in improving

students' writing skills. The differences between this research and previous studies lie in the target population and the specific focus of each study.

Overall, this research supports and extends previous findings that indicate mobile learning applications can improve students' vocabulary mastery. By integrating technology such as WordUp into vocabulary learning, it is hoped that students can achieve better English proficiency and feel more confident in using new vocabulary in everyday communication. Further research is recommended to explore the impact of this application on other language skills, such as speaking and writing, as well as to examine its long-term effects on vocabulary retention.