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The Effect Of Wayground Application On Students' Vocabulary Mastery At The Tenth Grade Of SMA Negeri 1 Siempat Nempu Hulu

Pengaruh Aplikasi Wayground Terhadap Penguasaan Kosakata Siswa Kelas Sepuluh SMA Negeri 1 Siempat Nempu Hulu

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ABSTRACT

Vocabulary mastery is a crucial component of English language learning; however, conventional vocabulary instruction often promotes passive learning and limited student engagement. Preliminary observations revealed that students demonstrated relatively low vocabulary mastery, indicating the need for more interactive digital learning tools. This study, therefore, aimed to examine the effect of the Wayground application on improving tenth-grade students' vocabulary mastery and to compare the learning outcomes of students taught using Wayground with those instructed through conventional methods through a quantitative experimental approach employing a non-equivalent control group design involving two tenth-grade classes consisting of 60 students, using a 20-item multiple-choice vocabulary test administered through pre-test and post-test procedures. The findings revealed that although both groups experienced improvement, the experimental group demonstrated substantially greater progress, with the mean score increasing from 47 to 76 compared to the control group, which improved only from 48 to 51, while the Independent Samples t-test produced a value of 9.35 that exceeded the t-table value of 2.00 at the 0.05 significance level. These results indicate that the Wayground application significantly enhances students' English vocabulary mastery and represents an effective digital learning tool for supporting vocabulary development in English language instruction.

Keywords: Wayground application, vocabulary mastery, digital learning media, EFL students.

1. Pendahuluan

English has become a global language that connects people across various fields such as education, technology, diplomacy, and socio-cultural interaction. As a lingua franca, it enables communication among individuals from different nations and linguistic backgrounds. In Indonesia, English is taught as a compulsory subject because it is viewed as a gateway to global information and broader academic and professional opportunities. For this reason, English proficiency is regarded as a crucial skill that students must develop to respond effectively to the demands of globalization.

English learning requires a structured and carefully planned teaching process so that students can gradually build solid and comprehensive language skills. Within classroom instruction, teachers are expected to design appropriate methods, strategies, and media that allow students to take an active role rather than remain passive recipients. When instructional techniques lack variation, lessons easily become monotonous, and students struggle to grasp the material fully. Therefore, English teaching must be arranged with consideration of learners' needs, individual characteristics, and the ongoing advancements in educational technology.

English teaching encompasses four key skills: listening, speaking, reading, and writing. Listening helps students interpret spoken messages accurately, speaking supports them in

expressing ideas with confidence, reading guides them in understanding written information, and writing enables them to communicate thoughts in an organized written form. Since these skills are interdependent, they cannot be developed in isolation. To achieve effective learning outcomes, English instruction must balance the development of all four skills in an integrated manner. English as a language system places vocabulary at the core of all communicative abilities. Strong vocabulary knowledge is essential, as students with limited lexical resources often struggle to process language input and produce appropriate output. They may struggle to follow explanations, comprehend texts, or express ideas orally and in writing. Therefore, vocabulary receives substantial emphasis in English instruction, particularly at the senior high school level, where students continue to strengthen their foundational language competencies.

English vocabulary learning in many schools still relies heavily on traditional techniques. Teachers often ask students to copy word lists, memorize meanings, or repeat definitions, which results in passive learning with limited depth of understanding. These approaches typically lead to short-term memorization rather than meaningful learning, making it difficult for students to apply vocabulary in real communication. Consequently, learners tend to lose motivation, struggle to retain new words, and display limited confidence when using vocabulary in authentic contexts.

English instruction under the Merdeka Curriculum is intended to be more interactive, contextual, and student-centered. The curriculum encourages the use of digital media to create learning experiences that are engaging and relevant to students' everyday lives. However, the persistent use of conventional teaching methods contradicts these principles by limiting opportunities for independent learning and active language exploration. This mismatch highlights the need for innovative instructional media that align with contemporary educational goals.

English learning can be strengthened through the integration of digital tools such as Wayground, a quiz-based educational platform adapted from Quizizz. The application offers interactive tasks, gamification features, instant feedback, and a user-friendly interface, all of which help increase student participation and motivation. These features make vocabulary practice more engaging and allow learners to review content repeatedly in a flexible manner. As a result, Wayground provides an alternative approach to vocabulary instruction that differs from the traditional methods that have long dominated classroom practice.

English has been explored through the use of Wayground in several studies, although existing research remains limited in scope. Most studies have examined Wayground in relation to student motivation, teacher perceptions, or its use in teaching reading and functional texts. However, no research has specifically investigated Wayground as a tool for teaching vocabulary at the senior high school level. This absence of research reveals an important gap, especially considering that vocabulary is a fundamental element in developing English proficiency.

Through an initial interview with the English teacher at SMA Negeri 1 Siempat Nempu Hulu, several classroom issues were identified that further justify the need for this research. The teacher explained that students generally show low motivation toward English, which reduces their participation, especially during vocabulary lessons. Because the instruction still relies on traditional techniques—such as lectures, copying vocabulary lists, and memorizing definitions—students do not receive enough opportunities to engage actively with the material. As a result, learning becomes repetitive, and their vocabulary achievement remains limited. These early findings reinforce the urgency of integrating a more interactive digital tool, such as Wayground, to support vocabulary development and increase students' motivation in learning English.

To support the identification of the research problem, a preliminary study was conducted to examine students' initial level of vocabulary mastery. This initial investigation was conducted by administering a brief diagnostic vocabulary test to 30 tenth-grade students at SMA Negeri 1 Siempat Nempu Hulu. The test consisted of multiple-choice questions covering basic English vocabulary that had already been taught in regular classroom instruction. The primary purpose

of this preliminary stage was to gain an understanding of students' vocabulary achievement under existing teaching practices, rather than to compare learning outcomes between groups.

The findings of the preliminary vocabulary test indicate that students' vocabulary mastery was generally low. Most students obtained scores below the school's minimum mastery standard, which reflects difficulties in recognizing word meanings and using vocabulary accurately. These results are consistent with the information gathered from a brief interview with the English teacher, who reported that students often experience problems in remembering vocabulary and tend to show low participation during vocabulary lessons delivered through conventional teaching methods.

Table 1. Results of Preliminary Research

No	Initial Name of Students	Score
1.	RF	44
2.	WM	45
3.	RS	42
4.	MB	50
5.	FR	47
6.	AS	53
7.	AK	40
8.	IM	48
9.	OT	52
10.	AP	46
11.	CS	45
12.	FA	54
13.	SR	61
14.	NS	52
15.	GB	44
16.	ZM	62
17.	AS	40
18.	AP	53
19.	MS	50
20.	YS	42
21.	PG	45
22.	AN	47
23.	KG	50
24.	JS	51
25.	AP	51
26.	WS	51
27.	GS	43
28.	SU	59
29.	NT	47
30.	JL	50

The preliminary research results shown in Table 1.1 were obtained by converting students' raw test scores into percentages. Each score was calculated by dividing the number of correct answers by the total number of test items and multiplying the result by 100. This procedure was used to describe students' initial level of vocabulary mastery. The preliminary data served to support the identification of the research problem and were not intended for statistical analysis.

Overall, the preliminary research provides clear empirical evidence that students' vocabulary mastery has not yet reached the expected level and that current instructional practices do not sufficiently support active vocabulary use. This condition highlights the need

for a more engaging and effective teaching approach that can enhance students' motivation and vocabulary achievement. Therefore, this study aims to investigate the effect of using the Wayground application on the vocabulary mastery of tenth-grade students at SMA Negeri 1 Siempat Nempu Hulu.

2. Metodology

This study applies a quantitative-experimental approach. As (Creswell & Creswell, 2014) explains, "experimental research is used when the researcher intends to test the impact of a treatment or intervention on an outcome by comparing groups". In school settings, randomly assigning students to different groups is often impractical because class groupings are institutionally predetermined. For this reason, this research employs a quantitative-experimental design, which Creswell describes as suitable when "random assignment is not possible, yet the researcher still seeks to examine causal relationships."

The decision to use a quantitative-experimental method is also supported by (Arikunto, 2010). She notes that "experimental research is research that seeks to observe the effect of a treatment on a particular group by comparing it to a group that did not receive the treatment." (Arikunto, 2010) further clarifies that in educational settings, "existing classes can be used as experimental and control groups." This condition reflects the situation in the present study.

To implement this approach, the research adopts the Non-Equivalent Control Group Design, one of the most frequently used quantitative-experimental designs. (Creswell & Creswell, 2014) explains that this design includes administering pre-tests and post-tests to both the experimental and control groups to observe changes resulting from the treatment. Consistent with Arikunto's view, the groups in this study are intact classes: the experimental group is taught vocabulary using the Wayground.

3. Literature Review

(Brown, 2007) describes English as a multifaceted communication system comprising grammar, vocabulary, pragmatics, and phonology. He emphasizes that English functions not only as a linguistic structure but also as a medium for meaningful interaction in social and academic contexts. Because it serves as a global lingua franca, this reinforces the point made in Chapter I that English plays a crucial role in Indonesian education.

(Brown, 2007) highlights that proficiency in English relies on four essential skills—listening, reading, writing, and speaking—which function as an integrated system in both understanding and producing language. These skills are interconnected and develop through meaningful exposure, regular practice, and mastery of linguistic elements such as grammar, pronunciation, and, most critically, vocabulary.

(Khan, 2024) Support this by showing that students with an extensive vocabulary speak more confidently, fluently, and accurately. In essence, speaking relies heavily on vocabulary because it provides the basic units for constructing meaning in conversations.

This aligns with (Nation, 2001), who asserts that readers struggle to interpret texts effectively when confronted with too many unfamiliar words. Thus, possessing sufficient vocabulary not only supports reading fluency but also allows students to engage with academic materials more independently.

(Nation, 2001) offers a more specific perspective by explaining that vocabulary knowledge includes three main dimensions: form, meaning, and use. This view implies that learning vocabulary involves more than memorizing word lists.

From a language-learning theoretical perspective, Wayground aligns with the framework of Mobile-Assisted Language Learning (MALL). MALL highlights flexibility, accessibility, interactivity, and the role of mobile devices in supporting self-directed learning (Kukulska-Hulme, 2013).

Wayground offers several instructional advantages that align with the principles of Mobile-Assisted Language Learning (MALL). MALL highlights the use of mobile devices to facilitate flexible and learner-centered language learning across different contexts (Kukulska-Hulme, 2009).

Another relevant study by (Simamora et al., 2025) "The Influence of Drill and Practice Method in Vocabulary Learning" explored how structured instructional techniques can improve students' vocabulary mastery.

4. Results And Discussion

1.1 Data

The data in this study were derived from students' pre-test and post-test scores in both the experimental and control groups. These results are presented to illustrate the students' initial proficiency and to assess their improvement following the treatment. In this research, data were obtained from two classes: the experimental and control classes. The data were collected using two tests, namely a pre-test and a post-test. The pre-test was administered during the first meeting to assess students' initial vocabulary. After the experimental class received treatment using the Wayground application, the post-test was conducted in the final meeting to evaluate the students' learning outcomes. The results of both the pre-test and post-test were then organized and presented in a table. These data are important to provide an initial overview of students' performance and to identify whether there is a noticeable difference between the experimental and control groups before and after the treatment.

Table 2. The Results of the Pre-test and Post-test Experimental Class

No	Students	Pre-Test(X1)	Post-Test (X2)
1.	YS	40	85
2.	FT	45	55
3.	SU	40	75
4.	RT	40	50
5.	AM	50	85
6.	RM	60	85
7.	MS	45	90
8.	MW	35	75
9.	RS	35	65
10.	SS	35	70
11.	FM	65	95
12.	DS	50	80
13.	FB	50	90
14.	JM	50	95
15.	OT	55	75
16.	RN	50	55
17.	SS	45	75
18.	DK	40	80
19.	MS	55	65
20.	ZS	50	85
21.	SS	45	65
22.	KS	65	80
23.	ZD	65	75
24.	KA	45	80
25.	SS	40	85
26.	IS	40	65

27.	NB	75	80
28.	JS	55	85
29.	FS	50	75
30.	HN	35	70
Total		1420	2290
Mean		47,3333333	76,33333333

After administering the pre-test, several difficulties in students' vocabulary mastery were identified, particularly in their ability to distinguish and correctly use nouns in sentences. To address this issue, the researcher implemented a treatment using the Wayground application as an interactive learning tool.

As presented in Table 4.1, the experimental class demonstrates a clear performance improvement. The total pre-test score was 1420, with a mean of 47.33, while the total post-test score increased to 2290, with a mean of 76.33. This substantial increase indicates that the students performed significantly better after receiving the treatment.

The improvement from the pre-test to the post-test suggests that the use of the Wayground application contributed positively to students' vocabulary mastery. Moreover, most students achieved higher scores in the post-test, indicating a consistent pattern of improvement across the class.

Table 3. The Results of Pre-test and Post-test Control Class

No	Students	Pre-test (Y1)	Post-test (Y2)
1.	CM	65	70
2.	NS	30	50
3.	JS	35	45
4.	YM	30	50
5.	KS	55	55
6.	JS	50	55
7.	LL	45	45
8.	YH	35	35
9.	EL	35	50
10.	PS	45	40
11.	AP	25	35
12.	MS	75	65
13.	CS	70	60
14.	DM	55	60
15.	FS	55	50
16.	HS	65	60
17.	MP	30	40
18.	MS	45	60
19.	GM	25	35
20.	CS	65	65
21.	RM	60	60
22.	CS	60	60
23.	SH	65	55
24.	AP	30	45
25.	AS	55	60
26.	SS	50	60
27.	SS	45	40
28.	WS	30	55
29.	MS	60	40
30.	TS	75	55

Total	1465	1555
Mean	48,83333	51,83333

Based on Table 3. As presented in Table 4.2, the results of the control class show only a slight improvement in students' vocabulary performance. The total score in the pre-test was 1465, with a mean of 48.83, while the total post-test score increased to 1555, with a mean of 51.83. Although there is an increase in scores, the improvement is relatively limited. Most students show only minor progress, and in some cases, the scores remain unchanged or fluctuate. This indicates that the learning process conducted without the use of the Wayground application did not significantly enhance students' vocabulary mastery.

Compared to the experimental class, the control class demonstrates a much smaller gain in performance. This difference suggests that conventional teaching methods were less effective in improving students' vocabulary outcomes.

To determine the effectiveness of the treatment, the researcher calculated the difference between the pre-test and post-test scores in both experimental and control classes. This calculation aims to measure the extent of students' improvement after the learning process.

Table 4. The Calculation Score of Pre-Test and Post-Test Experimental Class

No	Students	Pre-Test(X1)	Post-Test (X2)	X2-X1 (X)	X^2
1.	YS	40	85	45	2025
2.	FT	45	55	10	100
3.	SU	40	75	35	1225
4.	RT	40	50	10	100
5.	AM	50	85	35	1225
6.	RM	60	85	15	225
7.	MS	45	90	45	2025
8.	MW	35	75	40	1600
9.	RS	35	65	30	900
10.	SS	35	70	35	1225
11.	FM	65	95	30	900
12.	DS	50	80	30	900
13.	FB	50	90	40	1600
14.	JM	50	95	45	2025
15.	OT	55	75	20	400
16.	RN	50	55	5	25
17.	SS	45	75	35	1225
18.	DK	40	80	40	1600
19.	MS	55	65	10	100
20.	ZS	50	85	35	1225
21.	SS	45	65	15	225
22.	KS	65	80	15	225
23.	ZD	65	75	10	100
24.	KA	45	80	40	1600
25.	SS	40	85	45	2025
26.	IS	40	65	25	625
27.	NB	75	80	5	25
28.	JS	55	85	30	900
29.	FS	50	75	25	625
30.	HN	35	70	30	900
Total		1420	2290	870	29100
Mean		47,3333333	76,33333333	756900	

Based on the table above, the difference between the pre-test and post-test scores (X) represents the individual improvement of each student. The total gain score of the experimental class is 870. The complete calculation for the mean gain (Mx) and the deviation square (dx^2) to test the hypothesis will be presented in Section 4.2 Data Analysis. This value is used as a component in calculating the t-test to determine the significance of the differencebetween groups.

Similarly, the calculation of gain scores was also conducted for the control class, as presented in Table 5.

Table 5. The Calculation Score of Pre-Test and Post-Test Control Class

No	Students	Pre-test (Y1)	Post-test (Y2)	X2-X1(X)	X^2
1.	CM	65	70	5	25
2.	NS	30	50	20	400
3.	JS	35	45	10	100
4.	YM	30	50	20	400
5.	KS	55	55	0	0
6.	JS	50	55	5	25
7.	LL	45	45	0	0
8.	YH	35	35	0	0
9.	EL	35	50	15	225
10.	PS	45	40	-5	25
11.	AP	25	35	10	100
12.	MS	75	65	-10	100
13.	CS	70	60	-10	100
14.	DM	55	60	5	25
15.	FS	55	50	-5	25
16.	HS	65	60	-5	25
17.	MP	30	40	10	100
18.	MS	45	60	15	225
19.	GM	25	35	10	100
20.	CS	65	65	0	0
21.	RM	60	60	0	0
22.	CS	60	60	0	0
23.	SH	65	55	-10	100
24.	AP	30	45	15	225
25.	AS	55	60	5	25
26.	SS	50	60	10	100
27.	SS	45	40	-5	25
28.	WS	30	55	25	625
29.	MS	60	40	-20	400
30.	TS	75	55	-20	400
	Total	1465	1555	90	3900
	Mean	48,83333	51,83333	8100	

Based on the table above, the total gain score of the control class is 90, with a mean gain (My) of 3. This indicates that the improvement in the control class is minimal compared to the experimental class.

2.1 Data Analysis

Having presented the raw data and gain scores, this section outlines the statistical analyses undertaken to evaluate the research hypothesis. The analytical process encompassed three main procedures to validate the findings: First, a Normality Test was conducted to

establish the normal distribution of the data. Second, a Homogeneity Test was performed to verify the equal variance between the experimental and control groups. Lastly, hypothesis testing via the t-test formula was employed to investigate the statistical significance of the Wayground application's effect on students' vocabulary mastery.

2.2.1 Normality Test

The normality test in this research was conducted using the Shapiro-Wilk test through SPSS version 25.0. The results of the normality test are presented in Table 4.5. The Shapiro-Wilk normality test shows that all pre-test and post-test data. The results indicate that all significance values are greater than 0.05, which means that the data are normally distributed. Therefore, the assumption of normality is fulfilled, and the data are appropriate for further parametric analysis.

Table 6. Test of Normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pre tes experiment	.143	30	.123	.944	30	.117
post tes experiment	.154	30	.069	.952	30	.188
pre tes control	.148	30	.093	.935	30	.067
post test control	.163	30	.041	.934	30	.062

The Shapiro-Wilk normality test shows that all pre-test and post-test data in the experimental and control groups are normally distributed, as all significance values are > 0.05.

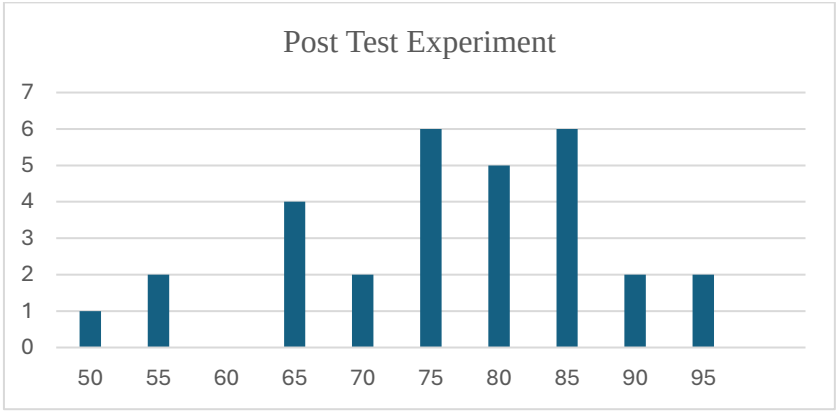

Figure 1. Post Test Experimental

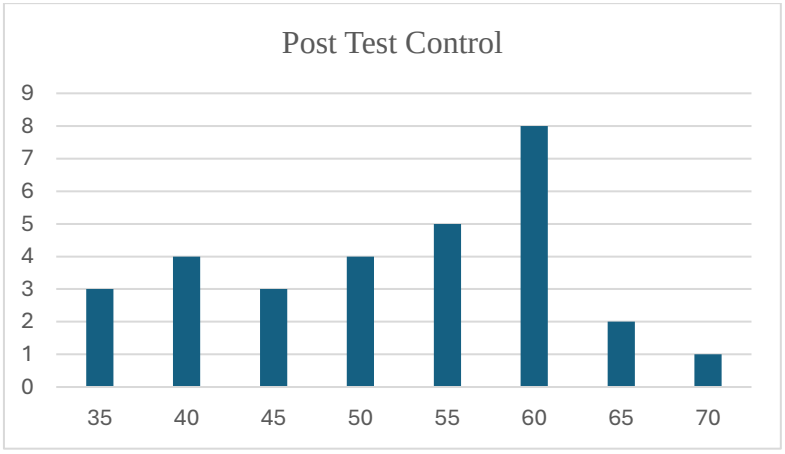

Figure 2. Post Test Control

Based on the histograms above, the distribution of post-test scores in both the experimental and control groups appears to be relatively symmetrical. There is no extreme skewness observed in the data distribution. This visual evidence supports the results of the Shapiro-Wilk normality test, which indicated that the data are normally distributed. Therefore, both statistical and visual analyses consistently indicate that the data meet the assumption of normality.

2.2.2 Homogeneity Test

A homogeneity test was conducted to determine whether the variances of the experimental and control groups were equal. This test is important as one of the assumptions for applying parametric statistical analysis, particularly the independent sample t-test. The data were analyzed using SPSS version 25.0, and the results are presented in Table 4.6.

Table 7. Test of Homogeneity

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Nilai	Based on Mean	.162	1	58	.689
	Based on Median	.239	1	58	.627
	Based on Median and with adjusted df	.239	1	57.283	.627
	Based on trimmed mean	.162	1	58	.689

The result of the homogeneity test shows that the significance value is 0.689, which is higher than 0.05 (0.689 > 0.05). This indicates that the variance of the data between the two groups is homogeneous. Therefore, the assumption of homogeneity is fulfilled, and the data are appropriate for further analysis using parametric tests.

2.2.3 Hypothesis Testing (T-test)

To test the hypothesis and determine the significance of the difference between the experimental and control classes, the independent-samples t-test was used. Before calculating the t-value, the mean gain and the deviation squares of both groups were calculated as follows:

a. Mean Gain of Experimental Class (Mx)

$$\mathrm{Mx} = \frac{\sum \mathrm{x}}{\mathrm{N}}$$

$$\mathrm{Mx} = \frac{870}{30}$$

$$\mathrm{Mx} = 29$$

b. Mean Gain of Control Class (My)

$$\mathrm{My} = \frac{\Sigma \mathrm{y}}{\mathrm{N}}$$

$$\mathrm{My} = \frac{90}{30}$$

My = 3

c. Deviation Square of Experimental Class (dx^2)

$$\mathrm{dx}^2 = (\Sigma \mathrm{x}^2 - \frac{(\sum \mathrm{x}^2)}{\mathrm{N}}$$

$$\mathrm{dx}^2 = (29100) - \frac{(870^2)}{30}$$

$$\mathrm{dx}^2 = (29100) - \frac{756900}{30}$$

dx^2 = 3870

d. Deviation Square of Control Class (dy^2)

dy^2=$(\sum y^2) - \frac{(\sum y^2)}{N}$

$dy^2 = 3900 - 270$

$dy^2 = 3630$

After obtaining the values above, the t-test was calculated using the following formula:

$$t = \frac{Mx - My}{\sqrt{\left[\frac{dx^2 + dy^2}{N_x + Ny - 2}\right]\left[\frac{1}{Nx} + \frac{1}{Ny}\right]}}$$

$$t = \frac{29 - 3}{\sqrt{\left[\frac{3870 + 3630}{30 + 30 - 2}\right]\left[\frac{1}{30} + \frac{1}{30}\right]}}$$

$$t = \frac{26}{\sqrt{\left[\frac{7500}{58}\right]\left[\frac{2}{30}\right]}}$$

$$t = \frac{26}{\sqrt{[129{,}31][0{,}06]}}$$

$$t = \frac{26}{\sqrt{7{,}7586}}$$

$$t = \frac{26}{2{,}78}$$

$$t = 9{,}35$$

Hypothesis testing was conducted to determine whether the use of the Wayground application has a significant effect on students' vocabulary mastery. The statistical hypotheses are as follows:

1. Null hypothesis (Ho) There is no significant effect of using the Wayground application on students' vocabulary mastery of tenth-grade students at SMA Negeri 1 Siempat Nempu Hulu.
2. Alternative hypothesis (Ha) There is a significant effect of using the Wayground application on students' vocabulary mastery of tenth-grade students at SMA Negeri 1 Siempat Nempu Hulu.

The criteria for testing the hypothesis are presented in a table.

Table 8. Hypothesis Formula

Criteria	Hypothesis	Decision
$t_o\ (t_{test}) > t_t\ (t_{table})$	Ha	Accepted
	Ho	Rejected
$t_o\ (t_{test}) < t_t\ (t_{table})$	Ho	Accepted
	Ha	Rejected

Based on the calculation, the obtained t_{test} is 9.35. At the level of siginicance 0.05 (5%) with degrees of freedom $(df) = N_x + Ny - 2 = 58$, the t_{table} value is 2.00. Since t_{test} (9.35) > t_{table} (2.00), it can be concluded that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is acceptdet. This means that the use of Wayground application has a significant effect on students' vocabulary mastery.

3.1 Finding

The findings of this study were derived from the analysis of students' The findings of this study were derived from the analysis of students' pre-test and post-test scores in both experimental and control groups. The pre-test measured students' initial vocabulary mastery, while the post-test assessed their improvement after the treatment. The comparison of these scores provides an overview of students' progress during the research.

To provide a more comprehensive understanding of the data, descriptive statistics were calculated for both groups, including mean, standard deviation, minimum, and maximum scores.

Figure 3. Descriptive Statistics

Descriptives

	kelompok			Statistic	Std. Error
Nilai pretes	experiment	Mean		47.33	1.530
		95% Confidence Interval for Mean	Lower Bound	44.20	
			Upper Bound	50.46	
		5% Trimmed Mean		47.13	
		Median		47.50	
		Variance		70.230	
		Std. Deviation		8.380	
		Minimum		35	
		Maximum		65	
		Range		30	
		Interquartile Range		15	
		Skewness		.227	.427
		Kurtosis		-.767	.833
	control	Mean		48.83	2.823
		95% Confidence Interval for Mean	Lower Bound	43.06	
			Upper Bound	54.61	
		5% Trimmed Mean		48.70	
		Median		50.00	
		Variance		239.109	
		Std. Deviation		15.463	
		Minimum		25	
		Maximum		75	
		Range		50	
		Interquartile Range		28	
		Skewness		-.013	.427
		Kurtosis		-1.223	.833
Nilai Postes	experiment	Mean		76.33	2.089
		95% Confidence Interval for Mean	Lower Bound	72.06	
			Upper Bound	80.61	
		5% Trimmed Mean		76.67	
		Median		77.50	
		Variance		130.920	
		Std. Deviation		11.442	
		Minimum		50	
		Maximum		95	
		Range		45	
		Interquartile Range		16	
		Skewness		-.537	.427
		Kurtosis		-.091	.833
	control	Mean		51.83	1.802
		95% Confidence Interval for Mean	Lower Bound	48.15	
			Upper Bound	55.52	
		5% Trimmed Mean		51.85	
		Median		55.00	
		Variance		97.385	
		Std. Deviation		9.868	
		Minimum		35	
		Maximum		70	
		Range		35	
		Interquartile Range		16	
		Skewness		-.263	.427
		Kurtosis		-.982	.833

The experimental group achieved a higher mean score compared to the control group. In addition, the standard deviation of the experimental group is lower, indicating that the data are more consistently distributed. This suggests that students in the experimental class not only performed better but also showed more stable learning outcomes.

The comparison of pre-test and post-test mean scores is presented in the table:

Table 9. The Mean Scores of Pre-Test and Post-Test

Class	Pre-Test Mean	Post-Test Mean
Experimental class	47,33	76,33
Control class	48,83	51,83

As presented in Table 4.9, both groups experienced an increase in vocabulary scores after the instructional process. However, the improvement in the experimental group was substantially greater, with the mean score rising from 47 to 76. In contrast, the control group showed only a modest gain, increasing from 48 to 51. This suggests that the use of the Wayground application was more effective in enhancing students' vocabulary mastery than conventional teaching methods.

These results are further supported by statistical analysis, which indicates that the use of the Wayground application has a significant effect on students' vocabulary mastery.

4.1 Discussion

The findings of this study demonstrate that the use of the Wayground application has a statistically significant effect on students' vocabulary mastery. This is evidenced by the results of hypothesis testing, where the obtained t-value exceeded the critical value. Such a result indicates that the difference in learning outcomes between the experimental and control groups is not due to chance, but rather to the treatment applied. Therefore, the Wayground application can be considered an effective instructional strategy for enhancing students' vocabulary mastery.

The improvement observed in the experimental group can be explained through the learning features offered by the Wayground platform. The application combines interactive quizzes, immediate feedback, and gamified elements that encourage active participation. In vocabulary learning, active engagement is essential because it helps students process and retain new words more effectively. When learners actively respond to questions and receive instant feedback, they tend to develop a clearer understanding of word meaning and usage. Moreover, repeated exposure to vocabulary through structured activities strengthens memory retention and supports long-term learning.

From a theoretical standpoint, vocabulary acquisition is closely linked to meaningful use, repetition, and learner engagement. Learning environments that promote active participation and provide immediate feedback are more likely to support effective vocabulary retention. In this context, the Wayground application aligns with these principles by offering interactive and repetitive learning experiences. As a result, students are not only able to recognize new vocabulary but also use it more appropriately in context.

The findings of this study are in line with those of Dewi and Rahma (2022) in their research entitled "The Effect of Using Quizlet toward Students' Vocabulary Mastery." Their study found that digital learning applications significantly improved students' vocabulary achievement compared to traditional teaching methods. In addition, Dewi and Rahma reported that technology-based tools increased students' motivation and participation in learning activities. This similarity reinforces the idea that digital platforms can create more interactive learning environments that support vocabulary development.

Despite these similarities, the platforms used in both studies differ. Dewi and Rahma employed Quizlet, which mainly focuses on flashcards and matching exercises, while this study used Wayground, which integrates quiz-based activities with gamification and competitive elements. These features may create a more dynamic learning atmosphere that encourages students to participate more actively. Therefore, this study not only confirms previous findings but also extends them by showing that gamified quiz-based platforms like Wayground can offer a more engaging approach to vocabulary learning.

Furthermore, the significant improvement in the experimental group may also be influenced by students' level of engagement during the learning process. Digital platforms tend to capture students' attention by combining instructional content with game-like features such as scoring systems, competition, and immediate feedback. These elements can enhance motivation and promote active involvement. In contrast, conventional teaching methods often rely on explanation and memorization, which may limit students' opportunities to actively practice and apply vocabulary.

The findings of this study have important implications for English language teaching, particularly in vocabulary instruction. The results suggest that integrating digital platforms such as Wayground into classroom practice can increase student engagement and improve learning outcomes. By incorporating interactive activities, immediate feedback, and repeated exposure to vocabulary, teachers can create a more effective and engaging learning environment. Thus,

gamified digital tools can serve as a valuable strategy for supporting vocabulary development in English language learning.

However, it is important to note that the effectiveness of the Wayground application may depend on several factors, including students' familiarity with technology and their level of motivation. Students who are less comfortable with digital tools or less engaged in the learning process may not achieve the same level of improvement. Therefore, teachers should ensure that the use of technology-based learning tools is supported by proper guidance and effective classroom management.

5. Conclusion

Based on the results of data analysis and discussion, several conclusions can be drawn from this research. This research examined the effect of implementing the Wayground application on students' vocabulary mastery among the eleventh-grade students of SMA Negeri 1 Siempat Nempu Hulu.

1. The findings show that the use of the Wayground application positively affected students' vocabulary mastery. This is reflected in the improvement of post-test scores after the treatment. Students in the experimental group demonstrated greater progress than those who learned through conventional teaching methods.
2. Statistical analysis revealed a significant difference between the vocabulary achievement of the experimental and control groups. The experimental group obtained a higher mean score in the post-test, indicating that the integration of the Wayground application provided a more effective approach to vocabulary instruction.
3. The results of the statistical analysis further confirm these findings. The hypothesis testing revealed that the calculated t-test value was higher than the critical value of the t-table (2.36 > 1.686). Based on this result, the alternative hypothesis (Ha) was accepted, while the null hypothesis (Ho) was rejected. This statistical evidence indicates that the implementation of the Wayground application significantly improved students' vocabulary mastery.

Overall, these findings suggest that the Wayground application can serve as an effective instructional tool to support students' vocabulary development in English.

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