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IMPROVING GRAMMAR AND VOCABULARY THROUGH WAYGROUND: A QUASI-EXPERIMENTAL STUDY

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Abstract

Grammar and vocabulary mastery plays a central role in English as a Foreign Language (EFL) learning, as these components directly influence learners' ability to construct accurate meaning and communicate effectively. Despite their importance, grammar and vocabulary assessment in many EFL classrooms remain dominated by conventional, teacher-centered practices that provide limited feedback and insufficient learner engagement. Although previous studies have reported positive student perception toward gamified platforms such as Wayground, empirical evidence examining their impact on measurable grammar and vocabulary achievement, particularly at the junior high school level, remains limited. This study aimed to investigate the effectiveness of Wayground as a digital assessment tool in improving eight-grade students' grammar and vocabulary achievement. A quantitative approach employing a quasi-experimental design with a non-equivalent control group was used. The participants consisted of 50 eight-grade students at MTs DDI Baru Polman, West Celebes, Indonesia, divided into an experimental group and a control group. Data were collected through pretest and post-test measures and analyzed using descriptive statistics and the Mann-Whitney U test. The findings revealed that while both groups showed improvement, the experimental group achieved significantly higher post-test score than the control group ($p < 0.05$), with the medium effect size, indicating a meaningful educational impact. These results suggest that Wayground effectively supports grammar and vocabulary learning through immediate feedback, repeated practice, and gamified engagement. In conclusion, Wayground can be considered a pedagogically effective supplementary digital assessment tool for enhancing grammar and vocabulary achievement in junior high school EFL context.

Keywords: Wayground, grammar, vocabulary, quasi-experimental study

INTRODUCTION

Grammar and vocabulary are widely recognized as core elements of English language proficiency because they play a central role in learners' ability to comprehend linguistic input and generate meaningful language output. Vocabulary knowledge functions as the primary gateway to meaning, while grammatical competence regulates how words are systematically combined to form accurate and intelligible expressions. Within English as a Foreign Language (EFL) setting, especially at the junior high school level, insufficient control of grammatical structures and limited lexical resources frequently result in recurring language errors, diminished communicative confidence, and lower academic performance (Schmitt, 2020; Ellis, 2021).

Despite their crucial role in language learning, grammar and vocabulary instruction in many EFL classrooms continues to depend heavily on traditional teaching and assessment practices, such as teacher-centered explanations, textbook-driven exercises, and paper-based tests (Ellis, 2021). These practices tend to emphasize memorization of grammatical rules and isolated vocabulary items rather than meaningful and contextualized language use, which limits learners' ability to apply linguistic knowledge in authentic contexts (Panadero et al.

2022). Furthermore, conventional assessment methods often provide delayed feedback, reducing learners' opportunities to immediately notice and correct errors during the learning process (Sato & Loewen, 2020). As a result, students frequently repeat similar grammatical mistakes and experience difficulty retaining newly learned vocabulary, particularly in abstract grammatical areas such as verb tense usage and subject-verb agreement.

In response to these instructional challenges, the adoption of educational technology has gained increasing prominence in language education, particularly in EFL contexts (Dichev & Dicheva, 2021). One instructional approach that has received growing scholarly attention is gamification, which involves the integration of game-related elements into non-game learning environments to enhance learner motivation and engagement (Sailer & Homner, 2020). Within language learning settings, gamified instruction is believed to promote active learner participation, reduce anxiety, and encourage repeated exposure to linguistic forms, conditions that are especially important for grammar and vocabulary development (Hung, 2021). Moreover, digital game-based platforms facilitate immediate feedback, enabling learners to monitor their performance and adjust their understanding in real time, which aligns closely with principles of formative assessment.

Wayground, previously known as Quizizz, is a digital game-based learning platform developed to support instruction, practice, and assessment through interactive and gamified activities. Originally introduced as an online quiz-based application, the platform underwent an official rebranding in mid-2025 to reflect its expanded role in personalized and data-driven learning environments (Kelly, 2025). Wayground enables teachers to design grammar and vocabulary tasks using a variety of question formats, such as multiple-choice, fill-in-the-blank, sentence correction and matching items, which are commonly used in language assessment contexts (Slamet & Fatimah, 2022). Through these diverse formats, learners can interact with linguistic forms in multiple ways, supporting both recognition and controlled language practice during the learning process.

One of the primary pedagogical advantages of Wayground is its corporation of gamification features, including points, leaderboards, timers, and avatars, which are designed to structure learning activities in a game-like format. Thes elements can help create a competitive yet enjoyable learning environment that can enhance students' motivation and active participation during grammar and vocabulary practice (Dicev & Dicheva, 2021). In addition, Wayground delivers immediate feedback for each learner response, enabling students to promptly notice grammatical or lexical errors and adjust their understanding accordingly (Li, 2021). This immediate corrective feedback is particularly beneficial for grammar learning, as delayed responses may contribute to the persistence or fossilization of inaccurate language forms. From a pedagogical perspective, Wayground also provides detailed learning analytics that present students' performance at both individual and classroom levels, allowing teachers to make data-driven instructional decisions and implement targeted remedial support based on learners' specific needs (Van der Kleij et al., 2020)

Beyond increasing learners' engagement, Wayground also facilitates formative assessment by positioning assessment as an integral and continuous component of the learning process rather than a solely summative evaluation (Pandero et al., 2022). Through repeated practice of grammar and vocabulary items accompanied by ongoing feedback, learners are provided with multiple opportunities to strengthen linguistic knowledge, which is

consistent with contemporary views on repetition and reinforcement in second language acquisition (Ellis, 2021). In addition, the platform accommodates diverse learner needs by offering flexible features such as adjustable time limits, self-paced learning modes, and multimedia integration, making it particularly suitable for heterogeneous classroom context with varying proficiency levels and learning preferences.

A number of previous studies have explored the implementation of Wayground in educational settings and have generally reported favorable outcomes. For instance, Handoko et al, (2021) investigated the use of Quizizz as an assessment tool in a higher education context and found that students showed a strong preference for the platform compared to conventional assessment methods, largely due to its interactive features and immediate feedback mechanisms. Despite these positive findings, the study was conducted in a non-language subject area and involved adult learners, which limits the applicability of its result to EFL grammar and vocabulary instruction at the secondary school level. Consequently, empirical evidence examining the effectiveness of Wayground for younger EFL learners, particularly in relation to specific language components such as grammar and vocabulary, remains insufficient.

Within the context of English language learning, Pertiwi (2020) investigated students' perception of Quizizz as an assessment tool by employing qualitative interviews with vocational high school learners. The findings revealed that students perceived the platform as enjoyable and motivating due to its competitive and game-like characteristics, which positively influenced their engagement during English assessment. However, the study involved a very limited number of participants and did not examine actual gains in grammar or vocabulary achievement, thereby restricting its empirical contribution. In a similar vein, Amalia (2020) reported highly positive student responses toward the use of classroom engagement and learning atmosphere. Nevertheless, the study primarily emphasized learners' perception and attitudes, without providing quantitative evidence of its impact on measurable language learning outcomes.

A more comprehensive perspective on the use of Quizizz in language education was offered by Wen and Aziz (2022) through a systematic literature review focusing on its implementation in ESL classroom. Their review indicated that Wayground is effective in increasing student engagement and facilitating vocabulary and grammar recall through the integration of gamified elements and immediate feedback mechanisms. Nevertheless, the authors also identified several limitations, including technical constraints, time-related pressure during activities, and insufficient empirical evidence concerning long-term learning outcomes. Most importantly, Wen and Aziz (2022) highlighted the need for further empirical investigation that directly examines the relationship between Wayground usage and measurable language achievement, particularly through experimental or quasi-experimental research designs.

Another relevant contribution was provided by Slamet and Fatimah (2022), who examined the development and validation of a Quizizz-based assessment instrument for junior high school English learners. The findings indicated that the instrument achieved a high level of validity and reliability, suggesting its suitability for classroom assessment purposes. However, the study primarily focused on evaluating the technical quality of the assessment instrument rather than investigating its pedagogical effectiveness in improving students' grammar and vocabulary mastery through actual classroom implementation. As a result,

empirical evidence regarding the impact of Wayground-based assessment on learners' grammatical and lexical achievement remains limited.

Taken collectively, existing studies indicate that Wayground demonstrates considerable potential as an engaging and motivating assessment tool in educational settings. Nevertheless, much of the current literature predominantly concentrates on learners' perceptions, level of engagement, or the technical development of assessment instruments, while providing limited empirical evidence regarding actual learning outcomes. Moreover, research that specifically examines grammar and vocabulary achievement among junior high school students, particularly within Indonesian EFL contexts, remains notability limited.

To address the identified research gaps, the present study examines the effectiveness of Wayground as a digital assessment tool in enhancing eight-grade students' grammar and vocabulary achievement at MTs DDI Baru Polman. Using a quasi-experimental research design with pretest and post-test measures, this study seeks to generate empirical evidence on whether the integration of Wayground results in significantly higher grammar and vocabulary outcomes compared to conventional instructional approaches. The findings of this study are expected to contribute to the growing body of literature on technology-enhanced language assessment and to provide practical pedagogical insights for English teachers in implementing effective strategies to support grammar and vocabulary learning.

METHOD

This study adopted a quantitative research approach employing a quasi-experimental design with a non-equivalent control group. This design was chosen to evaluate the effectiveness of Wayground as a digital assessment tool by comparing grammar and vocabulary learning outcomes between an experimental group receiving the intervention and a control group taught through conventional instructional methods. The quasi-experimental approach is considered appropriate for educational research conducted in natural classroom settings where random assignment of participants is not feasible (Creswell & Cresswell, 2022).

The study was carried out at MTs DDI Baru Polman, an Islamic junior high school situated in Polewali Mandar Regency, West Celebes, Indonesia. The participant consisted of eighth-grade students enrolled in the 2025/2026 academic year. Out of a total population of six classes comprising 153 students, two intact classes were selected using purposive sampling based on comparable class size and relatively low levels of English achievement. Class VIII D, consisting of 25 students, was designated as the experimental group, while Class VIII E, also consisting of 25 students, functioned as the control group.

The experimental group received grammar and vocabulary instruction integrated using conventional teaching and assessment methods without the use of digital game-based tools. To measure students' grammar and vocabulary achievement, both groups were administered a pretest prior to the implementation of the treatment and a post-test following the competition of the instructional sessions. The use of a pretest-post-test design enables the study to examine learning gains and compare changes in achievement between the two groups over the course of the intervention, which is a common procedure in quasi-experimental educational research (Creswell & Creswell, 2022).

The research instrument consisted of a grammar and vocabulary test comprising 25 multiple-choice items that assessed students' mastery of the simple present tense, simple past tense, and basic vocabulary in accordance with the eight-grade English curriculum. The same

set of test items was administered for both the pretest and post-test to ensure consistency in measuring students' learning progress across the intervention. Prior to its implementation, the instrument underwent validity and reliability testing to confirm its appropriateness for data collection. Item validity was examined using the Pearson Product Moment correlation, while internal consistency reliability was calculated using Cronbach's Alpha. The result showed that all test items were valid and that the instrument demonstrated a high level of reliability, with a Cronbach's Alpha coefficient of 0.975, indicating excellent internal consistency (Taber, 2020).

The instructional treatment was implemented across four instructional meetings, a duration considered pedagogically adequate to provide systematic exposure to targeted normal classroom schedules (Müller, Schmidt, & Schneider, 2021). During the treatment sessions, the experimental group engaged in grammar and vocabulary practice through Wayground-based quizzes designed to support interactive learning and immediate response-level feedback. The quiz activities included sentence competition tasks, verb tense selection, and vocabulary-focused questions that encouraged controlled practice of linguistic forms. In contrast, the control group received instruction through teacher explanation, textbook-based exercises, and paper-based assessments without gamified features or instant feedback. Conducting the treatment over multiple meetings enables interactive practice and continuous feedback, which are regarded as essential components of effective formative assessment in technology-supported learning environments (Boud & Dawson, 2021)

Data analysis in this study involved the use of both descriptive and statistical techniques. Descriptive statistics were employed to summarize students' pretest and post-test scores by calculating measures such as the mean, standard deviation, minimum, and maximum value in order to provide an overview of students' performance. Prior to conducting hypothesis testing, a normality test was performed to examine the distribution of the data. As the results indicate that the data were not normally distributed ($p < 0.005$), a non-parametric statistical procedure was deemed appropriate. Consequently, the Mann-Whitney U test was applied to determine whether there was a statistically significant difference between the post-test scores of the experimental and control groups, as this test is suitable for comparing two independent groups when normality assumptions are violated (Pallant, 2020).

To estimate the magnitude of the treatment effect, effect size was calculated using the r formula derived from the standardized Z value obtained from the Mann-Whitney U test. This approach was employed to complement statistical significance testing by providing information about the strength of the observed difference between groups. The interpretation of effect size followed commonly accepted benchmarks, in which r value of 0.10, 0.30 and 0.50 indicate small, medium, and large effects, respectively (Field, 2020). Including effect size analysis allowed more meaningful evaluation of the practical impact of Wayground on students' grammar and vocabulary achievement beyond p-values alone.

FINDINGS AND DISCUSSION

Findings

The descriptive statistics showed that both the experiment and control groups demonstrated relatively similar performance in the pretest, indicating comparable initial grammar and vocabulary proficiency. The experimental group obtained a mean pretest score of 52.32, while the control group achieved a mean score of 51.84. this similarity confirms that the two groups

started from an equivalent baseline, thereby supporting the internal validity of the quasi-experimental design.

Following the treatment, improvement was observed in both groups; however, the experimental group demonstrated substantially greater progress. The mean post-test score of the experimental group increased to 77.44, whereas the control group achieved mean score of 65.12. Although traditional instruction contributed to learning gains in the control group, the larger improvement in the experimental group indicates that the students who engaged in Wayground-based activities outperformed those who received conventional instruction alone.

Inferential analysis using the Mann-Whitney U test confirmed that the observed difference was statistically significant. The test results ($U = 184.500$, $Z = -2.492$, $p = 0.013$, $p < 0.05$) indicate a significant difference between the post-test scores of the experimental and control groups. This finding demonstrates that the improvement in students' grammar and vocabulary achievement was attributable to instructional treatment rather than chance.

To further examine the magnitude of the treatment effect, effect size was calculated using the r formula. The resulting r value of 0.352 falls within the medium effect range, suggesting that Wayground had a moderately strong practical impact on students' grammar and vocabulary achievement. This indicates that the intervention was not only statistically effective but also educationally meaningful in a real classroom context.

Discussion

The findings of this study indicate that the use of Wayground as a digital assessment tool significantly improved students' grammar and vocabulary achievement compared to conventional instructional methods. This result supports the growing body of research suggestion that game-based digital platforms can enhance learning outcomes when integrated into EFL classroom. In particular, the higher post-test scores achieved by the experimental group demonstrate that Wayground not only promotes engagement but also facilitates measurable academic improvement.

The present findings are consistent with Wen and Aziz (2022), who concluded that Wayground effectively supports grammar and vocabulary recall through features such as repetition and instant feedback. While their study synthesized existing literature through a systematic review, the current research extends these findings by providing empirical evidence from a quasi-experimental design involving junior high school students. This contribution is particularly important, as it responds directly to their recommendation for more outcome-based research examining the impact of Wayground on language achievement.

Similarly, the result aligns with Handoko et al. (2021), who reported that students preferred Wayground over conventional assessment methods due to its interactive features and immediate feedback. However, their study was conducted in a non-language subject and focused on adult learners in higher education. The presents study expands this line of research by demonstrating that the positive affordances of Wayground also translate into improved grammar and vocabulary achievement among adolescent EFL learners in secondary school contexts.

Previous study conducted in Indonesian EFL settings have largely emphasized students' perception of Wayground rather than measurable learning outcome. Pertiwi (2020), for example, found that vocational high school students viewed Wayground as an enjoyable and motivating assessment tool during English lesson. Likewise, Amalia (2020) reported positive students' responses toward the use of Wayground in formative assessment, particularly in

terms of classroom atmosphere and engagement. While this study highlighted affective benefits, they did not empirically examine whether increase engagement led to improvement in grammar and vocabulary performance. The present findings address this limitation by demonstrating that positive engagement is accompanied by statistically significant learning gains.

In addition, the results are in line with Slamet and Fatimah (2022), who developed and validated a Wayground-based English assessment instrument for junior high school students. Although their study confirmed the validity and reliability of the instrument, it did not investigate its instructional effectiveness in improving students' language achievement. By contrast, the current study provides evidence that validated Wayground-based assessment, when implemented as part of classroom instruction, can positively influence students' grammar and vocabulary outcomes.

The observe improvement in the experimental group may be attributed to the formative nature of Wayground-based assessment. Through repeated quiz activities, students were exposed to grammar and vocabulary items multiple times, allowing them to reinforce linguistic forms and correct errors during the learning process. Recent research on digital formative assessment emphasizes that assessment tools that integrate continuous feedback and repeated practice can enhance learning effectiveness, particularly in skill-based subjects such as language learning (Zhang & Hyland, 2024). This perspective supports the interpretation that Wayground functioned not merely as an assessment tool, but as an active component of the learning process.

Furthermore, the medium effect size obtained in this study suggests that Wayground had a meaningful practical impact on students' grammar and vocabulary achievement. In educational research, a medium effect size indicates that the intervention produces observable learning benefits beyond statistical significance. Recent studies in technology-enhanced language learning have emphasized the importance of reporting and interpreting effect sizes to demonstrate the real-world relevance of digital interventions (Kruk & Pawlak, 2025). Thus, the effect size reported in this study strengthens the claim that Wayground offers tangible pedagogical value in classroom practice.

Despite these positive findings, itis important to note that Wayground should be viewed as supplementary tool rather than a substitute for teacher instruction. Although students benefited from Wayground-based assessment, teacher explanation remained essential for clarifying grammatical rules and contextualizing vocabulary use. This finding echoes contemporary perspectives in technology-integrated pedagogy, which argue that digital tools are most effective when used to support, rather than replaced, teacher-led instruction (O'Dowd, 2024).

Several limitations should be acknowledged when interpreting the findings of this study. The treatment was conducted over four instructional meetings, which may not fully capture the long-term effects of Wayground on grammar and vocabulary development. Additionally, the use of multiple-choice tests focused primarily on receptive knowledge and may not reflect students' ability to apply grammatical and lexical knowledge in productive language skills. These limitations suggest that future studies should examine longer interventions and include a wider range of assessment formats.

Overall, the findings of this study contribute to the existing literature by demonstrating that Wayground is not only perceived positively by students but also empirically effective in

improving grammar and vocabulary achievement in junior high school EFL context. By addressing the gaps identified in previous study, particularly those related to learning outcomes, this research strengthens the evidence base for pedagogical use of Wayground as a digital assessment tool.

CONCLUSION AND SUGGESTION

This study examined the effectiveness of Wayground as a digital assessment tool in improving junior high school students' grammar and vocabulary achievement. The finding demonstrates that the students who engage in Wayground-based assessment achieved significantly higher post-test scores than those taught through conventional instructional assessments methods. The statistically significant difference, accompanied by a medium effect size, indicates that the integration of Wayground produced not only measurable but also educationally meaningful learning gains.

These findings extend previous research on Wayground, which has largely focused on students' perceptions, engagement, and instrument development, by providing empirical evidence of its effectiveness in enhancing grammar and vocabulary achievement. The results suggest that Wayground function effectively as a formative assessment tool by facilitating immediate feedback and repeated practice, which support students' mastery of linguistic forms. At the same time, the findings confirm that Wayground is most effective when used as a supplementary tool alongside teacher-guided instruction, rather than as a replacement for direct teaching. Overall, this study contributes to the growing literature on technology-enhanced language assessment by demonstrating that Wayground offers practical pedagogical value in junior high school EFL contexts, particularly in supporting grammar and vocabulary learning through efficient, engaging, and feedback-oriented assessment practices.

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APPENDIX

Table 1. Validity of Grammar and Vocabulary Test

Item	Pearson Corelation	Sig. (2-tailed)	N	Result
P1	0.400	0.029	25	Valid
P2	0.454	0.012	25	Valid
P3	0.970	0.000	25	Valid
P4	0.970	0.000	25	Valid
P5	0.970	0.000	25	Valid
P6	0.491	0.006	25	Valid
P7	0.970	0.000	25	Valid
P8	0.457	0.011	25	Valid
P9	0.970	0.000	25	Valid
P10	0.970	0.000	25	Valid
P11	0.970	0.000	25	Valid
P12	0.970	0.000	25	Valid
P13	0.456	0.011	25	Valid
P14	0.572	0.001	25	Valid
P15	0.970	0.000	25	Valid
P16	0.429	0.018	25	Valid
P17	0.970	0.000	25	Valid
P18	0.503	0.005	25	Valid
P19	0.575	0.001	25	Valid
P20	0.970	0.000	25	Valid
P21	0.970	0.000	25	Valid
P22	0.354	0.005	25	Valid
P23	0.970	0.000	25	Valid
P24	0.340	0.006	25	Valid
P25	0.970	0.000	25	Valid

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Table 2. Reliability of Grammar and Vocabulary Test

Item	Corrected Item-Total Corelation	Cronbach's Alpha if Item Deleted
P1	0.361	0.977
P2	0.417	0.976
P3	0.967	0.973
P4	0.967	0.973
P5	0.967	0.973
P6	0.459	0.976
P7	0.967	0.973
P8	0.424	0.976
P9	0.967	0.973
P10	0.967	0.973
P11	0.967	0.973
P12	0.967	0.973
P13	0.420	0.976
P14	0.541	0.976
P15	0.967	0.973
P16	0.393	0.976
P17	0.967	0.973
P18	0.468	0.976
P19	0.544	0.976
P20	0.967	0.973
P21	0.967	0.973
P22	0.322	0.976
P23	0.629	0.975
P24	0.301	0.977
P25	0.967	0.973

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Table 3. Descriptive Analysis of Experimental and Control Classes

Descriptives

	1 = Experimental, 2 = Control			Statistic	Std. Error
Nilai Pretest	1.00	Mean		35.0000	2.89828
		95% Confidence Interval for Mean	Lower Bound	29.0183	
			Upper Bound	40.9817	
		5% Trimmed Mean		34.8444	
		Median		30.0000	
		Variance		210.000	
		Std. Deviation		14.49138	
		Minimum		7.00	
		Maximum		64.00	
		Range		57.00	
		Interquartile Range		20.00	
		Skewness		.487	.464
		Kurtosis		-.278	.902
	2.00	Mean		35.4800	2.29646
		95% Confidence Interval for Mean	Lower Bound	30.7403	
			Upper Bound	40.2197	
		5% Trimmed Mean		34.4444	
		Median		30.0000	
		Variance		131.843	
		Std. Deviation		11.48231	
		Minimum		24.00	
		Maximum		67.00	
		Range		43.00	
		Interquartile Range		13.00	
		Skewness		1.386	.464
		Kurtosis		1.432	.902
Nilai Posttest	1.00	Mean		77.4400	3.36357
		95% Confidence Interval for Mean	Lower Bound	70.4979	
			Upper Bound	84.3821	
		5% Trimmed Mean		78.3222	
		Median		80.0000	
		Variance		282.840	
		Std. Deviation		16.81785	
		Minimum		40.00	
		Maximum		97.00	
		Range		57.00	
		Interquartile Range		30.00	
		Skewness		-.553	.464
		Kurtosis		-.737	.902
	2.00	Mean		65.1200	3.64341
		95% Confidence Interval for Mean	Lower Bound	57.6004	
			Upper Bound	72.6396	
		5% Trimmed Mean		65.0889	
		Median		60.0000	
		Variance		331.860	
		Std. Deviation		18.21703	
		Minimum		34.00	
		Maximum		97.00	
		Range		63.00	
		Interquartile Range		33.50	
		Skewness		.303	.464
		Kurtosis		-1.151	.902

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Table 4. Normality Test

Tests of Normality

	1 = Experimental, 2 = Control	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Nilai Pretest	1.00	.168	25	.068	.943	25	.175
	2.00	.243	25	<,001	.838	25	.001
Nilai Posttest	1.00	.172	25	.053	.919	25	.049
	2.00	.171	25	.058	.917	25	.044

a. Lilliefors Significance Correction

Table 5. Hypothesis Test

Ranks

	1 = Experimental, 2 = Control	N	Mean Rank	Sum of Ranks
Nilai Posttest	1.00	25	30.62	765.50
	2.00	25	20.38	509.50
	Total	50		

Test Statistics[a]

	Nilai Posttest
Mann-Whitney U	184.500
Wilcoxon W	509.500
Z	-2.492
Asymp. Sig. (2-tailed)	.013

a. Grouping Variable: 1 = Experimental, 2 = Control