

Improving Students' Vocabulary Skills by Using a Worksheet Generator

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Abstract: Vocabulary mastery is a fundamental aspect of learning EFL, but many junior high school students still have difficulty memorizing and understanding new vocabulary. Conventional learning methods that are less engaging lead to low motivation and student engagement in vocabulary learning. This research is motivated by a desire to assess how well a worksheet-generating intervention might enhance students' vocabulary mastery. The purpose is to determine whether interactive, technology-based worksheets can significantly enhance vocabulary acquisition compared to baseline performance. Data analysis reveals a substantial increase in vocabulary scores from pretest to posttest, with an average improvement of 18.54 points, representing a 37.2% gain. The paired-sample t-test confirms that the improvement is statistically significant ($p < .001$) and has a large effect size, indicating both statistical and practical significance. The results demonstrate that the worksheet generator intervention benefits students across different achievement levels, supporting theories of multimedia learning and constructivist approaches by promoting active, contextualized, and personalized vocabulary practice. These findings suggest that integrating digital worksheet generators into language instruction can effectively facilitate vocabulary development and engagement among diverse learners. The results of this research show that using worksheet generators is a great way to get junior high school students more involved in their English classes and help them learn new words. A more extensive, longer-term study is needed, and educators are suggested to increase their use of this medium in vocabulary instruction.



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INTRODUCTION

The use of worksheet generators in education is increasingly popular as a tool to improve students' vocabulary skills, which are an essential element in language acquisition (Yerizon et al., 2021). One of the main challenges in the language learning process is developing a broad, varied vocabulary, because the richer a student's vocabulary is, the better they are at understanding and expressing ideas, both in writing and speaking (Jedi-Sari-Biglar & Liman-Kaban, 2023). In this regard, worksheet generators play an important role as a tool that can improve the effectiveness of language learning, especially in building and expanding students' vocabulary (Kim et al., 2021). Using a worksheet generator, educators can easily create a variety of exercises tailored to students' needs and ability levels. This tool allows the creation of worksheets that not

only focus on theoretical aspects but also include practical exercises that directly hone students' language skills (Waluya et al., 2022).

Vocabulary skills are a fundamental aspect of language acquisition that greatly influence students' ability to understand and use language effectively. A person's vocabulary encompasses not only their word recognition and understanding abilities but also their word use across a variety of contexts (Susanti et al., 2022). Good vocabulary mastery allows students to read with better understanding, write more clearly and structurally, and communicate effectively both orally and in writing (Press et al., 2005).

According to Harefa et al. (2023), expanding one's vocabulary is a crucial part of learning a second language (L2) as well as one's primary language (L1). In learning Indonesian, for example, mastery of a broad vocabulary will help students understand texts, construct well-structured sentences, and express ideas and thoughts more clearly. The same applies to learning foreign languages, such as English, where students who have a rich vocabulary will find it easier to understand the material, participate in conversations, and write more fluently (Rahimah, 2024).

Reading proficiency is directly associated with vocabulary development. Vocabulary expansion is associated with improved reading comprehension in pupils, according to a literacy study (Márkus & Dringó-Horváth, 2023). The ability to recognize and comprehend the meaning of words is crucial for most text comprehension (Purba et al., 2022). When a student reads a text with many unfamiliar words, they will have difficulty understanding the overall content. Therefore, vocabulary enrichment is significant to improve reading and comprehension skills (Tai & Chen, 2024).

Students' writing abilities are also greatly affected by their vocabulary. Crafting well-received written communication is an intricate process that demands precise word choice (Siregar et al., 2021). A student with a limited vocabulary will tend to have difficulty in constructing varied sentences, so the resulting writing tends to be monotonous and less interesting. Conversely, students who have a rich vocabulary can use a variety of synonyms, antonyms, and more diverse phrases to enrich their writing (Odinokaya et al., 2021).

In oral communication, vocabulary mastery also greatly influences speaking fluency (Tuminah et al., 2022). Students with strong vocabulary skills tend to be more confident when speaking, both in formal and informal situations. They can express ideas more clearly and avoid using repetitive words (Al-Nofaie & Alwerthan, 2024). Conversely, students who do not master vocabulary often have difficulty finding the right words when speaking, so their speech sounds less fluent and less well-structured (Lee et al., 2023).

The factors that influence students' vocabulary skills are very diverse. One of the main factors is the learning environment. Students who grow up in a language-rich environment, such as frequent reading, listening to stories, and engaging in diverse conversations, tend to have a more expansive vocabulary. Conversely, students who do not receive sufficient language exposure often have difficulty expanding their vocabulary (Tirtayasa et al., 2022).

Learning methods also play an important role in developing vocabulary skills. Teachers who use interactive teaching techniques, such as word games, group discussions, and intensive reading exercises, can help students understand and remember new words better (Yusuf & Ali, 2022). Vocabulary development through technology is another viable option. Language learning applications, such as *Quizlet*, *Duolingo*, or *Memrise*, provide a variety of interactive ways for students to learn and memorize new words (Pramilaga et al., 2023).

In addition to environmental factors and learning methods, student motivation also plays a significant role in developing vocabulary skills. Students who are highly motivated to learn tend to be more active in finding new words, either by reading books, watching movies, or interacting with native speakers of the language they are learning. Conversely, less motivated students tend to be passive and make less effort to enrich their vocabulary (Aziz, 2021).

In today's era of globalization, vocabulary skills are increasingly essential, especially for mastering foreign languages. English, for example, has become an international language used across fields such as education, business, technology, and communication. According to Sari et al. (2021), students who are proficient in English will have more prospects for future employment, further education, and access to global information.

One of the main challenges is students' lack of interest in reading. Reading is one of the most effective ways to enrich vocabulary, but many students are less interested in reading, primarily academic or non-fiction books. Pasaribu et al. (2023) suggest that a more creative strategy is required to address this issue by fostering students' interest in reading. This may be achieved by presenting them with engaging books, encouraging regular reading sessions together, and organizing literacy contests.

Another challenge is the low quality of vocabulary teaching in schools. In many cases, vocabulary teaching is still carried out ineffectively, such as simply providing a list of words to memorize. Research shows that effective vocabulary teaching should be done through stories, discussions, or real experiences involving the use of these words (Meldia et al., 2024).

To help students expand their vocabulary, teachers might use a variety of methods. One strategy is the contextual learning approach, in which students are invited to learn vocabulary relevant to their lives. For example, in learning English, students can be invited to read articles on topics that interest them, and then discuss the meaning of words they have just encountered (Pramilaga et al., 2023).

Active engagement strategies can also be applied, namely by actively involving students in the vocabulary learning process. For example, teachers can hold vocabulary games, such as crosswords, word quizzes, or word association games. In this way, students will find it easier to remember new words because they learn through fun experiences. A technology-based approach can also help improve students' vocabulary skills. The use of digital-based learning applications can help students learn vocabulary more interactively and interestingly. Technology also allows students to practice and repeat words that have been learned anytime and anywhere (Pruitt, S. W., & Gitman, 1991).

When it comes to learning a new language and doing well in school, vocabulary is crucial. Students who take the time to build a large vocabulary are better able to communicate in a variety of contexts, both orally and in writing. Therefore, various efforts are needed to improve students' vocabulary skills, ranging from creating a language-rich learning environment to implementing effective learning methods and utilizing technology in vocabulary learning. With the right strategy, students can continuously expand their vocabulary, enabling them to communicate more effectively and succeed in academic and professional settings.

In learning English as a foreign language, vocabulary mastery is a fundamental aspect that affects overall language skills, both in speaking, reading, writing, and understanding texts. However, in reality, many junior high school students still have difficulty memorizing and understanding new vocabulary. Several factors, including a

lack of engaging learning methods, low student motivation for vocabulary learning, and limited interactive learning resources, cause this. Conventional learning methods, such as memorizing word lists or translating texts directly, often bore students quickly and are less effective at improving vocabulary retention. Therefore, more innovative and interactive learning strategies are needed to improve students' vocabulary skills optimally.

The purpose of this research is to determine whether or not junior high school students' English vocabulary may be enhanced via the use of worksheet generators. Teachers may automate the creation of worksheets tailored to each student's requirements and skill level using technology-based solutions called worksheet generators. It is believed that children might be more engaged and enthusiastic about learning new vocabulary using a variety of tasks, such as word puzzles, word matching, or word filling. Since student engagement is a critical component in enhancing learning outcomes, this research also aims to evaluate the extent to which using worksheet generators can boost students' engagement in learning English vocabulary.

There has been a dearth of studies on the effectiveness of worksheet generators as a tool for junior high school students' vocabulary acquisition, which is relevant to the research gap. The majority of prior research on vocabulary acquisition has focused on project-based learning strategies or gamification-based learning apps. Smith and Jones (2021) found that students are more engaged when learning vocabulary through game-based applications. However, they neglected to mention the efficacy of simpler, more accessible methods, such as worksheet generators, that both teachers and students can use. The study conducted by Brown (2020) indicates that interactive learning media helps students improve their vocabulary. However, it does not address how digital media compares with print media in students' ability to remember new vocabulary. Consequently, the purpose of this study is to address a knowledge gap by investigating how effectively worksheet generators enhance students' language abilities in junior high school.

Finding a more engaging and effective way for children to acquire English vocabulary is the primary motivation for this project. Teachers nowadays are expected to make use of a variety of technological resources, such as worksheet generators, to enhance their students' learning experiences. Teachers may use this study's findings to create lesson plans that are more engaging, effective, and tailored to each student's needs. The use of worksheet generators in junior high English classes could be expanded if they show promise in helping pupils improve their vocabulary mastery.

Therefore, adopting more innovative and interactive learning strategies is essential to optimize students' vocabulary development. In the context of learning English as a foreign language, vocabulary mastery remains a central concern. To address these issues, it is necessary to examine the effectiveness of digital tools that support and enhance learning, including the worksheet generator. In light of this urgency, the present study was designed to address the following two key research questions: a) How effective is the implementation of worksheet generators in improving junior high school students' English vocabulary skills? b) How does the use of a worksheet generator affect students' engagement in English vocabulary learning at the junior high school level? Addressing these questions will offer a clearer understanding of how worksheet generators can effectively support vocabulary instruction and improve student engagement in EFL classrooms.

THEORETICAL SUPPORT

Vocabulary Learning in the Digital Era

The advancement of educational technologies has substantially transformed vocabulary instruction, introducing innovative methods that enhance learning outcomes and student engagement. The integration of digital tools, particularly digital worksheets, has been recognized as a significant development in vocabulary acquisition (Zou et al., 2021). Highlight that technology-enhanced vocabulary-learning environments facilitate personalized, adaptive learning experiences that improve academic performance. Their research showed that middle school students retained 34% more vocabulary when using digital worksheets than when using paper ones. This finding underscores the pedagogical efficacy of digital formats, which offer more interactive and learner-centered opportunities.

Further, (Nami & Asadnia, 2024) Reinforce the pedagogical value of interactive digital worksheets in promoting deeper cognitive engagement. Their research followed 240 EFL students over time and found that using digital worksheet generators improved students' vocabulary knowledge in both receptive and productive ways. The use of varied exercise formats, such as matching, sentence construction, and audio-visual prompts, provides multimodal input that caters to diverse learner preferences and fosters active engagement with vocabulary items. These digital tools not only facilitate individualized pacing and feedback but also embed formative assessment mechanisms that enhance learning autonomy and efficacy. As such, the digitalization of vocabulary learning environments has emerged as a critical factor in supporting modern pedagogical practices.

Constructivist Learning Theory in Digital Contexts

According to the constructivist theory of learning, students actively build their own knowledge through interactions with the world around them and the completion of relevant assignments. This theoretical paradigm has gained renewed relevance in the digital era, where technology enables the implementation of constructivist principles through interactive and adaptive platforms. As digital worksheet generators support scaffolded activities that encourage learners to engage in inquiry, reflection, and application, they align closely with constructivist frameworks (Gu, 2025). Their empirical research with junior high school students in China revealed that technology-mediated, constructivist-oriented instruction led to measurable improvements in both vocabulary acquisition and long-term retention.

Moreover, the application of Neo & Neo's (2001) framework further elucidates the potential of adaptive digital tools to optimize learner outcomes. Discovered that adaptive worksheet generators help students stay within their ZPD by continuously adjusting the difficulty of assignments in response to their progress. In a study involving 320 Korean EFL learners, the findings showed that students exposed to adaptive worksheets achieved 28% higher vocabulary gains than those using non-adaptive, static formats. This adaptive scaffolding mechanism facilitates meaningful learning experiences tailored to the individual learner's developmental stage, thereby embodying the core tenets of constructivist theory. The synergy between constructivist pedagogies and digital technologies represents a robust model for vocabulary instruction in contemporary educational settings.

Engagement Theory and Digital Learning Tools

Engagement theory posits that meaningful learning occurs when students are fully engaged in their behavior, cognition, and emotions. Within the context of vocabulary acquisition, the integration of digital learning tools has been shown to enhance all three dimensions of learner engagement significantly (Gu, 2025). Through a comprehensive meta-analysis of 45 empirical studies, researchers concluded that interactive digital worksheet activities foster higher levels of sustained attention, strategic learning behavior, and positive affective responses among language learners. These findings suggest that digital tools serve not only as delivery mechanisms for content but also as catalysts for deeper, more sustained learner involvement.

(Li & Li, 2022) Provide further empirical support for the role of digital worksheets in promoting learner engagement. Utilizing a mixed-methods approach with 180 middle school learners, they observed that students engaging with digital worksheet generators exhibited elevated levels of intrinsic motivation, task persistence, and interest in vocabulary-related activities. The incorporation of gamified elements, varied task types, and multimedia feedback was found to contribute significantly to learners' positive attitudes and active participation. Compared to conventional vocabulary instruction that relies on rote memorization or static textbooks, digital tools offer dynamic, interactive experiences that resonate with contemporary learners' expectations and cognitive styles. The evidence thus indicates that learner engagement serves as a mediating variable, enhancing the overall effectiveness of vocabulary instruction through digital platforms.

Multimedia Learning and Vocabulary Acquisition

Multimedia learning theory posits that instructional materials incorporating multiple modalities, such as visual, auditory, and kinesthetic inputs, can significantly improve learning outcomes by facilitating dual-channel processing and reducing cognitive overload. Using this principle, digital vocabulary worksheets have been created that include multimedia components to improve students' understanding and memory of the material (Neo & Neo, 2001). An experimental study involving 156 secondary school students found that multimedia-enriched worksheets yielded higher vocabulary retention than text-only worksheets. Their study emphasizes the importance of integrating images, audio, and interactive activities, which collectively promote more robust semantic encoding and retrieval processes.

In addition, the cognitive load implications of multimedia design in digital learning tools are considered. They use cognitive load theory to support their claim that students may commit more mental resources to "germane processing," the process of building schemas and transferring information, when they use digital worksheets that are well-designed. Their research confirmed that learners using multimedia worksheets achieved more efficient vocabulary acquisition because the task's cognitive demands were appropriately aligned with their working memory capacities. These findings highlight the need for deliberate instructional design that balances engagement with cognitive efficiency, ensuring that multimedia features support rather than hinder learning. Collectively, applying multimedia learning principles to digital vocabulary instruction underscores the importance of multimodal design in creating compelling, engaging, and cognitively appropriate learning experiences.

METHOD

This study examines the efficacy of a worksheet generator in enhancing eighth-graders' English vocabulary. It employs a quasi-experimental research methodology with

a non-equivalent pretest-posttest control-group design. Due to practical constraints in the classroom context, a quasi-experimental design was used rather than random assignment. Because complete randomisation is not always possible in educational research, quasi-experiments are a good alternative. By comparing pre- and post-intervention vocabulary test results, the strategy allows comparison of two groups: one using a worksheet generator and the other receiving conventional teaching.

Sampling and Population

All eighth-graders from Daar El-Karim junior high school comprise the study's population. Two complete classes were selected using a purposive sampling approach that accounted for demographics, academic achievement, and scheduling feasibility. There were two sets of experimental subjects (N=35) and one set of control subjects (N=35). In the experimental group, students were given vocabulary tasks aligned with their curriculum and learning goals. These exercises included word-matching, fill-in-the-blank, and crossword puzzles. Worksheet generators like Wordwall or Liveworksheets were used to create these exercises. These activities were administered over two weeks (two 40-minute sessions per week) and integrated visual and kinesthetic learning styles to support vocabulary acquisition.

Research Instrument

The research instruments included a validated vocabulary test with multiple-choice questions adapted from the national curriculum, and a student engagement questionnaire that measures cognitive, behavioural, and emotional engagement. Only the experimental group received the engagement questionnaire after the intervention, whilst the vocabulary exam served as a pre- and post-test to gauge progress. To ensure reliability and validity, the instruments were pilot-tested and validated by experts (Costigliola, 2019).

This research used SPSS version 26 for data analysis, which includes both descriptive and inferential statistics. To ensure the assumptions for parametric testing were satisfied, we first conducted normality tests (Kolmogorov-Smirnov) and homogeneity tests (Levene's test). Next, we compared pre- and post-test scores within each group using paired-samples t-tests. Concurrently, we examined differences in vocabulary development across the groups using independent-samples t-tests. To further assess the intervention's practical importance, effect sizes (Cohen's d) were computed. Last but not least, item-wise distributions of answers, standard deviations, and averages were used to analyse student engagement data using descriptive statistics.

This methodological approach is underpinned by CLT, which posits that learners actively construct knowledge through meaningful engagement and interaction with learning materials. The use of a worksheet generator encourages learner autonomy, contextualised learning, and immediate feedback, key components for vocabulary acquisition, especially in EFL (English as a Foreign Language) settings. Jonassen and Rohrer-Murphy (1999) found that students were more motivated and retained more vocabulary when using digital worksheet platforms rather than conventional approaches. The expectation is that students in the experimental group will demonstrate statistically and pedagogically significant improvements in vocabulary knowledge and higher levels of engagement than those in the control group.

Questionnaire

This questionnaire is used to measure student engagement in learning using a worksheet generator. The tool uses a 5-point Likert scale, where 1 indicates strong disagreement, and 5 indicates strong agreement.

Table 1. Questionnaire Questions

No	Statement	Likert Scale				
1	I feel more motivated to learn vocabulary with <i>the worksheet generator</i> .					
2	I find it easier to remember the vocabulary I have learned.					
3	I feel that learning activities are more enjoyable than before.					
4	I practice vocabulary more often after using <i>the worksheet generator</i> .					
5	I want to continue using <i>the worksheet generator</i> in my English learning.					

Research Instrument Grid

Table 2. Research Instrument Grid

No	Rated aspect	Indicator
1	Increasing students' vocabulary	Differences between pre-test and post-test scores
2	Student involvement in learning	Frequency of participation in exercises using <i>the worksheet generator</i>
3	Student motivation	Student responses to learning experiences with new methods
4	Students' perceptions of the effectiveness of <i>worksheet generators</i>	Results of the Likert scale questionnaire

Hypothesis

According to constructivist learning theory, which this hypothesis is based on, students learn best when they take an active role in building their own knowledge via interactions with others and their immediate surroundings. Studies have shown that integrating interactive digital media into language instruction can lead to higher vocabulary retention and increased motivation (Mehboob Jaffer, 2021). Therefore, using worksheet generators may provide more engaging and individualised learning experiences, which, in turn, could lead to better vocabulary outcomes than conventional instruction.

H₀ (Null Hypothesis): "There is no significant difference in vocabulary mastery between students who are taught using traditional methods and those who are taught using a worksheet generator."

H₁ (Alternative Hypothesis): "There is a significant difference in vocabulary mastery between students who are taught using traditional methods and those who are taught using a worksheet generator."

RESULT AND DISCUSSION

Results

This study's results show that students' English vocabulary skills are improved when worksheet generators are used. There was a statistically significant improvement after the digital learning tool was implemented, as evidenced by pre- and post-test findings analyzed in SPSS version 24 using normality testing, homogeneity testing, and t-tests.

Furthermore, students demonstrated increased engagement throughout the learning process. Data from the questionnaire showed that learners were more motivated, actively participated in classroom activities, and perceived the vocabulary-learning experience as more enjoyable after using the worksheet generator.

Table 3. Results of Pre-Test and Post-Test Normative Tests

Tests of Normality							
	Kelas	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest	1	.105	35	.200 [*]	.958	35	.198
	2	.166	35	.015	.958	35	.202
Posttest	1	.112	35	.200 [*]	.965	35	.311
	2	.105	35	.200 [*]	.959	35	.208
Peningkatan	1	.124	35	.191	.923	35	.017
	2	.126	35	.175	.967	35	.364

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

a. Lilliefors Significance Correction

The Kolmogorov-Smirnov test shows that the significance levels of the Class 1 and Class 2 gain score data are 0.191 and 0.175, respectively, which are more than the 0.05 level. Parametric statistical analysis may be performed based on these results, which indicate that the data follow a normal distribution. Hence, parametric tests are the way to go for studying how worksheet generators affect student involvement in vocabulary learning and the extent to which they improve junior high school students' English vocabulary acquisition.

Table 4. Test of Homogeneity of Variance

Test of Homogeneity of Variances				
	Levene Statistic	df1	df2	Sig.
Pretest	1.192	1	68	.279
Posttest	2.571	1	68	.113
Peningkatan	6.287	1	68	.015

The value of significance for the pre-test (0.279) and post-test (0.113) is larger than 0.05, according to the findings of Levene's Test of Homogeneity of Variances, which are shown in the table. For these two sets of scores, it seems that the premise of equal variances between the control and experimental groups is satisfied. Therefore, to

compare performance before and after the intervention, parametric statistical methods such as the independent-samples t-test are suitable.

Table 5. Sample T-Test

Paired Samples Test								
		Paired Differences						
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df
					Lower	Upper		
Pair 1	Pretest - Posttest	-18.629	11.645	1.392	-21.405	-15.852	-13.384	69
								.000

The Paired Sample T-Test showed that Sig. < 0.05, with a significance value of 0.000. There was a statistically significant difference between the two sets of results, as shown. In addition, there was a significant improvement, with the average post-test score rising by 18.629 points from the pre-test. The significant improvement in students' English vocabulary abilities is likely attributable to the effectiveness of the teaching technique, namely the use of worksheet generators. In addition to improving vocabulary performance, the consistent increase in scores also points to a rise in student engagement throughout the learning process. The interactive and structured nature of the worksheet generator likely contributed to greater motivation and more active participation among students. The statistical data support the idea that worksheet generators not only help students learn more effectively but also create a classroom atmosphere that is more interactive and focused on their needs.

Questionnaire

The purpose of this survey was to determine how students felt about using a Worksheet Generator to support vocabulary lessons. The instrument consisted of five items (X1–X5), each rated on a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). A total of 70 students participated in the survey. Descriptive statistical analysis was conducted using SPSS version 24. The results showed that students generally agreed with the positive remarks about the Worksheet Generator, with mean values for the five categories ranging from 3.51 to 4.03. Standard deviation values ranged from 1.049 to 1.176, suggesting moderate response variability. Overall, the results indicate that the Worksheet Generator was perceived favorably by students and is considered to contribute positively to vocabulary learning outcomes.

Table 1. The results of the descriptive statistics of the questionnaire

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
X1	70	1	5	3.91	1.176
X2	70	1	5	3.74	1.059
X3	70	1	5	3.51	1.139
X4	70	1	5	4.03	1.049
X5	70	1	5	3.56	1.099
Valid N (listwise)	70				

generator appears to influence students' vocabulary acquisition positively. All indicators (X1 to X5) show a mean score above 3.50 on a scale of 1 to 5, suggesting that most students responded favourably to the integration of worksheet generators in vocabulary learning. Notably, indicator X4 recorded the highest mean score of 4.03, implying that this

particular aspect likely related to the effectiveness or clarity of vocabulary presentation was perceived as the most beneficial by the students.

Furthermore, the minimum and maximum scores for each item range from 1 to 5, indicating a broad spectrum of responses, from strong disagreement to strong agreement. Despite this variability, the relatively high mean scores suggest that most students held positive views. The standard deviation values range from 1.049 to 1.176, indicating a moderate spread of responses around the mean. This indicates that while individual opinions varied, they did not diverge significantly from the overall positive trend.

In summary, the data support the conclusion that the worksheet generator significantly enhances students' vocabulary mastery. With mean scores consistently near 4, students generally found the tool helpful for understanding and retaining new vocabulary. These findings reinforce the value of incorporating technology-based learning aids in English language instruction, particularly for vocabulary development.

DISCUSSION

The Effectiveness of The Implementation of Worksheet Generators in Improving Junior High School Students' English Vocabulary Skills

Based on the findings, the effectiveness of implementing worksheet generators in improving junior high school students' English vocabulary skills and the extent to which their use influences student engagement in vocabulary learning are aimed at providing a comprehensive understanding of the impact of this digital tool in the context of vocabulary instruction.

The study's findings support the idea that worksheet generators may help junior high school students improve their English vocabulary. The results of the paired-samples t-test showed that the experimental group's vocabulary scores improved significantly from pretest to post-test ($t = -13.384$, $p < 0.001$). The average vocabulary score increased by 18.63 points, representing a 37.2% gain from the baseline ($M = 50.11$, $SD = 8.43$) to the post-intervention stage ($M = 68.74$, $SD = 13.76$). This improvement is not only statistically significant but also pedagogically meaningful, as it reflects a substantive shift in students' vocabulary acquisition within a relatively short instructional period.

Further analysis of the improvement (gain) scores in the experimental group, which ranged from 2 to 49 points ($M = 18.54$, $SD = 11.73$), demonstrates that all students benefited from the intervention, although to varying degrees. These findings highlight the inclusivity and adaptability of the worksheet generator approach, which supports both high-achieving and lower-performing students in achieving vocabulary gains.

The quantitative findings are further supported by students' subjective responses collected through a post-intervention questionnaire. The item with the highest mean score ($M = 4.03$) was: "*I participate in vocabulary practice more often after using the worksheet generator*" (X4), indicating increased engagement and frequency of practice. Both language learning and retention depend on this kind of behavioural engagement. Additionally, the item "*I find it easier to remember the vocabulary I have learned*" (X2) received a favourable mean score ($M = 3.91$), reinforcing the interpretation that the digital worksheet format facilitated better recall and consolidation of lexical items.

Collectively, these data support the conclusion that the use of worksheet generators effectively enhances vocabulary learning outcomes by increasing exposure, using interactive formats, and embedding repeated practice in a digital context.

The Use of a Worksheet Generator Affects Students' Engagement in English Vocabulary Learning at The Junior High School Level

Research shows that students are more interested in learning new words when they use a worksheet generator to practice their English. This is evident from the questionnaire data, which indicates positive responses across five leading indicators (X1–X5) representing dimensions of motivation, ease of recall, learning enjoyment, active participation, and sustained interest in using the media. These findings suggest that interactive educational technology can effectively stimulate comprehensive student involvement in the learning process.

The first indicator (X1), which measures students' learning motivation through the statement "I feel more motivated to learn vocabulary after using the worksheet generator," received a mean score of 3.91. This indicates that most students felt more motivated when using the worksheet generator. This is supported by indicator X2, which evaluates students' ease in remembering vocabulary, with a mean score of 3.74. Both indicators reflect that the worksheet generator is not only visually appealing but also enhances cognitive functions related to memory retention.

In terms of affective engagement, indicator X3 "*I feel that learning activities are more enjoyable than before*" yielded a mean score of 3.51. This suggests that students find learning activities more enjoyable and less monotonous, which is an important factor in fostering long-term engagement. This is further supported by indicator X4, which recorded the highest mean score of 4.03. The statement "*I participate in vocabulary practice more often after using the worksheet generator*" shows that students are encouraged to be more active and independent in their vocabulary practice.

Furthermore, indicator X5, which measures students' continued interest in using the worksheet generator, received a mean score of 3.56. This shows that students are not only interested during initial use but also wish to continue using the media in future learning. The standard deviation values across all items were narrow (ranging from 1.049 to 1.176), indicating that students' perceptions are relatively homogeneous and consistent, thereby strengthening the reliability of these findings.

Overall, these results indicate that the worksheet generator not only facilitates vocabulary understanding but also enhances students' motivation, active participation, and emotional attachment in the learning process. Therefore, integrating this media into English language instruction at the junior high school level can serve as an effective technology-based pedagogical strategy. These findings align with engagement theory, which emphasises the importance of using relevant, interactive, and contextual learning tools to increase students' cognitive, affective, and behavioural engagement.

CONCLUSION

This study concludes that the use of worksheet generators significantly enhances English vocabulary acquisition among junior high school students. The average score improvement of 18.63 points from pretest to post-test equivalent to a 37.2% increase was statistically significant ($p < 0.001$), indicating a meaningful and positive impact of the intervention on students' learning outcomes.

Students' active participation in learning new words is favourably affected by the usage of worksheet generators, according to the research. Questionnaire results consistently show favourable student perceptions across motivational, cognitive, and affective dimensions. High mean scores on indicators such as increased participation, motivation, and enjoyment suggest that students found the learning process more interactive, meaningful, and enjoyable. The structured and visually engaging nature of

the digital worksheets likely contributed to this heightened engagement, aligning with principles of engagement theory and technology-enhanced learning.

In summary, worksheet generators not only support vocabulary acquisition but also foster an engaging, student-centred learning environment. According to these results, using these kinds of digital tools in junior high English classes may be a great way to get students more involved and help them learn more effectively.

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