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Developing a Wordwall-Based Digital Worksheet for Teaching Vocabulary to Junior High School Students

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Abstract

This study aims to determine the results of the development of students' worksheets using Wordwall applications to teach vocabulary. The subject of this study includes 32 students in the 9th grade of junior high school. This research adopted the research and development (R&D) method and the ADDIE model. The steps of this study are a) analysis, b) designing the product, c) development, d) implementation, and e) evaluation. This research uses validation sheets and questionnaires as instruments to obtain the results of the study. The results of the study based on the validation sheets is 90% from the total score, which means that the worksheets are suitable for use in English learning especially in vocabulary learning. The results of the students' questionnaire are 82%, which means that the worksheets can be used in the classroom as additional teaching media to support teachers in teaching vocabulary. These worksheets are suitable for developing students' vocabulary, improving students' engagement and enthusiasm in the classroom, and making the teaching and learning process more enjoyable.

Keywords : Worksheet; Wordwall; Vocabulary.

INTRODUCTION

Teaching vocabulary is important, especially for junior high school students. Vocabulary is a fundamental aspect of the first step in learning English as a foreign language. With sufficient vocabulary, students will find it easier to understand the meaning of words, which makes it easier for them to communicate with others and express their ideas in written form. These statements are supported by Richard (2002, p.255) in Manda et al. (2022), who argue that vocabulary is the most important aspect of language proficiency because it determines how well learners speak, listen, read, and write. As noted by Mukhtar et al. (2023) vocabulary knowledge is a crucial component of EFL instruction. It is much broader than just the variety of words or the quantity of vocabulary that students are familiar with. It also refers to understanding a language's word meanings. Furthermore, Wilkins in Thorn (2002: 13) as cited in Gultom et al. (2022) state that without grammar, very little can be conveyed, and without vocabulary, nothing can be conveyed. Which implies that vocabulary can be a key determinant of the fourth skill of English, which includes reading and writing comprehension, as well as listening and speaking comprehension. However, teaching vocabulary in junior high school can be quite challenging due to limited resources, limited time management in learning English, and low motivation to learn English.

Based on the first interview with the English teacher at the research site, the vocabulary teaching was mostly dependent on textbooks, and printed worksheets. As a result, students' participation was insufficient, and they had trouble in memorizing new vocabulary. As stated by Huang and Liu (2024), the main difficulties students face in learning vocabulary are: first, students only

have a single memory method to master vocabulary. Second, the traditional classroom teaching approach is single, boring, and inefficient, and third, many teachers ignore thinking and interest cultivation, and students end up memorizing words and find it difficult to use them flexibly in life.

In this study, the use of technology can be an alternative solution to support teachers and make a good strategy to make learning vocabulary more engaging and enthusiastic. This statement is strengthened by the theory from Mishra and Koehler (2006) in Sierra et al. (2023), which suggests the technological pedagogical content knowledge (TPACK) model as a powerful theoretical framework that seeks the curricular integration of technological components, with special emphasis on the efficient implementation of ICT to improve teaching and learning of school content. This statement, also supported by Susanti et al., in Hasbi (2025) describes Gen Z as a technologically adept and digitally connected generation known as kinesthetic, experimental learners, who tend to consume multimedia content that is engaging, interactive, powered by direct feedback and rewards. Moreover, Hasbi (2025) mentions some digital activities that could be useful for vocabulary learning, such as social media integration, digital storytelling, word mapping inspired by mind maps, memes and GIFs, and gamified learning. Based on these approaches, gamified learning has attracted significant attention to boost students' engagement and motivation during the learning process. According to Smiderle et al. (2020) in Syahfitri et al. (2025) gamification is a teaching strategy that aims to increase students' motivation and engagement in the educational process. Furthermore, according to Landers et al. (2017) and Nair & Mathew (2022) in Wang et al. (2024), gamification in education refers to "gamified learning," in which learning activities integrate game elements such as points, badges, leaderboards, and challenges to make learning activities more engaging and motivating for students. Gamification learning is fun and effective in increasing student engagement, motivation, collaboration, and sense of responsibility, while improving knowledge retention (Syahfitri et al., 2025; Manzano-León et al., 2023; Mirzaie Feiz Abadi et al., 2022). Language games can boost students' vocabulary knowledge and create an interesting learning environment (Rashid et al. 2019 in Pratiwi et al. 2023). This technique could increase student enthusiasm while boosting student learning outcomes. This is proven by positive feedback from students who use the Wordwall application in vocabulary lessons. Previous studies consistently indicated that digital learning media have a beneficial impact on vocabulary learning. Similarly, Weran et al. (2024) and Nuramimida et al. (2024) showed that using Wordwall significantly improved students' vocabulary mastery while boosing their motivation and classroom engagement. In the same way, Sirait and Hanim (2022) discovered that social media sited like Instagram and Twitter also improved students' vocabulary achievement. Though using various platforms, much research came to the same conclusion: interactive technology makes learning more engaging than traditional teaching methods.

Based on the problems above, the researcher proposes to develop a game-based worksheet using the Wordwall application as the teaching material. Wordwall is a web application that provides interesting, interactive, and educational games. Wafiqni and Putri (2021). Similarly, Khairunisa (2021) defines Wordwall as a web-based digital game application used by teachers to provide question and material evaluation games. Wordwall could be interpreted as a web application for creating educational games wrapped in engaging quizzes (Fakhruddin et al., 2021). Wordwall offers various templates for learning activities, such as airplane, group sort, spin

wheel, complete the words, and rank order. These templates are suitable for vocabulary learning because they create a fun and low-pressure learning environment.

Wordwall has been widely applied as an interactive learning platform, but the application of Wordwall in classroom practice is often limited to stand-alone game activities. Usually, students play the games without structured learning guidance, which makes it hard for teachers to integrate the activities into a full learning process. Therefore, a Wodwall-based worksheet must be created to combine interactive digital games with structured learning activities so that students can practice vocabulary in a systematic way and stay fully engaged throughout the lesson. In this research, the researchers designed a digital form that allows students to learn on their gadgets. This statement is supported by Puspita et al. (2025) who state that the use of digital media can help teachers create a more engaging, dynamic learning atmosphere that aligns with the characteristics of 21st-century learners. The application used to assist this research is the Wordwall application. As stated by Ramadhani and Gularso (2025), Student Worksheets (Lembar Kerja Peserta Didik or LKPD) is a type of teaching material that can be used both as a medium for delivering content and for training students' skills. LKPD serves as a learning guides for students to develop cognitive abilities, while also acting as a reference for fostering various other aspects of learning. Through this worksheet, students are expected to strengthen their vocabulary through fun, engaging activities. Various studies have shown that learning new vocabulary through games has increased vocabulary retention and made language learning fun and inspiring (Hoa and Trang, 2020; Ma & Yodkamlue, 2019; Selvi & Çoşan, 2018). Previous studies have proven that digital worksheets are valid and practical to be used as learning material. Previous research has consistently shown that digital worksheets are feasible learning materials. High levels of validity and practicality were reported by Rahmayani and Atmazaki (2025), Janah et al. (2025), Rahmi et al. (2023), and Anggraini and Susilowati (2022) demonstrating that digital worksheets can effectively assist classroom learning. These studies, however, concentrated on various topics and learning goals, including science, concept knowledge, writing abilities, and reading comprehension. On the other hand, the current study incorporates Wordwall-based gamified activities into the learning process and creates a digital worksheet especially for vocabulary learning.

Some of previous studies have shown the effectiveness of using Wordwall in improving students' vocabulary mastery, most of the studies focused only on the use of Wordwall as a game in the learning process without integrating it into teaching materials such as worksheets. This means that several studies on Wordwall focus only on its use as an evaluation tool rather than as a comprehensive learning material that guides students step by step in the learning process. For this reason, integrating Wordwall into a digital worksheet might provide students with more dynamic and interesting learning opportunities. The innovation of this study is the integration of interactive Wordwall tasks with structured worksheet activities within one teaching material. In addition, there is still limited research on the development of digital worksheets integrated with Wordwall for teaching vocabulary in junior high school. Most existing materials remain conventional or are not fully optimized to support interactive, studentcentered learning. Therefore, this research attempts to fill the gap by developing a digital gamebased worksheet using Wordwall that not only provides interactive activities but also serves as a structured learning guide to support mastery of vocabulary in procedural text.

Based on the explanation above, this research aims to develop a digital game-based worksheet using Wordwall to support vocabulary learning for junior high school students. With the research questions:

1) How is the process of developing students' worksheets using Wordwall application for teaching vocabulary in junior high school students?
2) How is the feasibility of developing students' worksheets using Wordwall application for teaching vocabulary in junior high school?
3) What are the students' responses to the use of worksheets using Wordwall application for teaching vocabulary in junior high school?

METHOD

The methods of this research are research and development (R&D) used by the ADDIE model. Research and Development (R&D) is a systematic approach in academic and industrial domains aimed at producing innovations in the form of applicable products, systems, or models. In the context of education and social sciences, the R&D method serves as a fundamental basis for developing instructional tools, media, and educational technologies relevant to the needs of learners and society at large.

This research uses the ADDIE (Analyze, Design, Develop, Implement, and Evaluate) model. The ADDIE model is a systematic framework designed to produce effective instructional products. It is not only applied in the development of learning media but also in curriculum design, digital learning systems, instructional modules, and teacher training programs. Due to its flexibility and wide applicability, the ADDIE model is often regarded as a foundational framework in instructional design (Siregar, 2025). Furthermore, The ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) was selected due to its systematic structure and flexibility, which allow continuous revisions to ensure both validity and practical use in real classrooms (Branch, 2009, in Lucardo et al.(2026).

According to Hamzah (2020:33) ADDIE model is a development model consisting of five stages namely, analysis, design, development, implementation, and evaluation. ADDIE model is schematized by Branch as a learning system with design as follows:

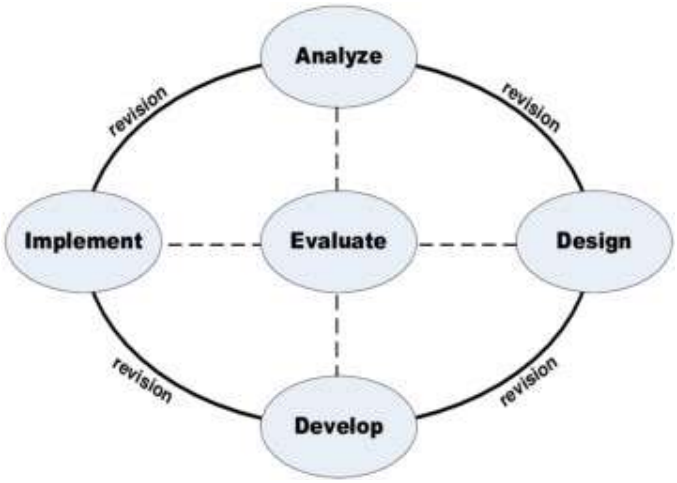

Figure 1. ADDIE stages by Rahmawati et al. (2023)

There are five steps to conduct research and development of the ADDIE model according to Branch (2009) in Pohan and Erlita (2025) the ADDIE model consists of five stages, which are

analysis, design, development, implementation, and evaluation and each of stages serving a distinct purpose in the instructional design process. The analysis stage concentrates on recognizing the requirements and issues of learners. The design stage focuses on the planning of goals, content and media. The development stage focuses on the actual formulation and verification of the product. The implementation stage involves the delivery and trial of the product. The evaluation stage collects feedback and evaluates products.

The subjects of this study were 32 students of 9th grade at one of junior high school in Cisarua. In this study, three instruments were used to collect data, the researcher used observation sheets, expert validation sheets, and students' questionnaires. The observation sheet included 11 items used to observe students' engagement during the implementation stage including opening activities, learning implementation, and closing activities and 6 items to observe students' activities in the classroom. The indicators were students' attention, participation and engagement of students during the learning process. Both observation checklists were a yes/no checklist. The experts filled in the validation sheets to assess the feasibility of the developed worksheet. The validation sheet consisted of 8 items in four aspects: content feasibility, language, media design, and presentation. All items were assessed on five-points Likert Scale ranging from 1 (very poor) to 5 (excellent). The validation sheet was validated by two expert validators, which are material experts and media experts to see the feasibility of the worksheet that was developed. While the students' questionnaires were given to gather the students' perspectives and responses towards the use of the worksheet using Wordwall application. The questionnaire had 10 items divided into four categorized, which were attractive, ease of use, motivation and usefulness. A four point of Likert Scale. Ranging from strongly disagree to strongly agree, was used by the students to demonstrate their responses after the implementation. Descriptive quantitative analysis was used to examine the data collected for this study. The researcher uses the formula from Sugiono, 2011 cited in Wati et al (2023). to analyze the results from observation sheets. The data from the expert validation sheet, observation sheet, and student questionnaire were manually calculated using percentage formulas. To measure the results of the score from the students' response the researcher uses rubric assessment from Meilanti (2018) in Putra (2023). Besides that, to calculate the results of the validation from the experts and students' response, the researcher uses the formula from Suharsimi Arikunto, (2010) cited in Wati et al. (2023).

$$\mathbf{P = \frac{}{\sum xi} x\ 100\%}$$

P = Feasibility
∑x = Number of Assessment Answers
∑xi = highest number of Answers

Table 1. Criteria of Product Feasibility

No	Percentages (%)	Category
1	81-100	Very feasible
2	62-81	Feasible
3	41-60	Feasible Enough
4	21-40	Less Feasible
5	>21	Very Less Feasible

Adopted from Azizah and Atun (2025)

RESULTS AND DISCUSSION

Results

1. Process of Developing Students' Worksheets Using Wordwall Application for Teaching Vocabulary in Junior High School

The researcher used the ADDIE model with the stages are follows:

a) Analysis

The researcher focus on identifying some specific needs by interviewing the teacher and identifying the characteristics of junior high school students that are related to vocabulary material. The analysis conducted by informal interview with the teacher, with the results of the analysis are the material that students will learn this semester are descriptive text and procedure text, also the type of textbook that students used during the learning process is facilitated by the government *Kurikulum Merdeka* textbook for 9th grade, during the learning process students only use textbooks and worksheets from the teacher, technology-based learning materials were not always integrated into classroom instruction. The teachers added that many students faced difficulties in memorizing new vocabulary and their interest frequently decreased in conventional learning activities. Therefore, there was a need for more interactive teaching materials which could encourage students to participate actively in vocabulary learning.

b) Design

For these stages, the researcher starts designing the worksheet by finding the source of the material to be used, finding questions for the activities, and selecting suitable Wordwall templates to support interactive teaching vocabulary activities based on the analysis that has been done before. The researcher used all the templates in the Wordwall to give the students lot of experience in using Wordwall applications.



Figure 2. Cover of the Worksheets

Figure 2. shows the worksheets' cover pages. To attract students' attention and maintain their interest in using the worksheets, the cover has an eye-catching and colorful design.

Additionally, it offers important information about the worksheet, such as the title and part of student identity.



Figure 3. **First Page of the Worksheets**

Figure 3. shows the opening page of the worksheets, which introduces page of the worksheets, which introduces the learning material and gives an overview of the task. To assist students in understanding the subjects before completing the following tasks, the worksheets' simple design and use of visuals aim to make it easier to understand and interesting for students.



Figure 4. The Content of the Worksheets

Figure 4. As researchers might notice there are 2 part of figure provided, the first part is the worksheets instructions, which informs students on how to use the designed worksheets. The steps that students must follow to finish the tasks are provided in the instructions. The picture next to the instructions is the text provided as reference to completing the worksheets activities. In the second part is the QR codes that allow the students to access interactive activities via Wordwall app. Students can scan the QR codes using an appropriate device and access the exercises directly. Through this integration, the worksheet can combine interactive digital activities with printed learning materials, increasing student engagement.

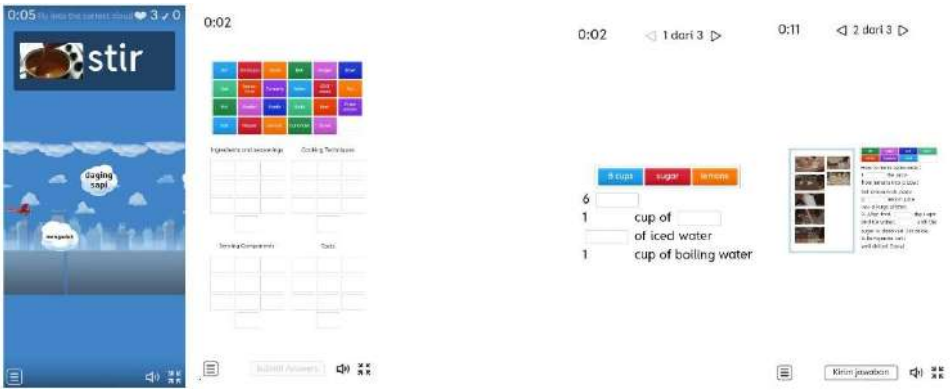

Figure 5. Worksheet Activities

Figure 5. shows the main activities included in the designed worksheet. The purpose of exercises is to give students the opportunity to practice vocabulary related to procedure texts. The worksheet helps students learn and practice the target vocabulary by combining written tasks with interactive and visual components.

c) Development

In these stage, the researchers re-created the activity and refined it into a more complete product. The researcher compiles the overall content of the worksheet, refines the questions, and integrates them into the selected Wordwall template to produce a digital worksheet after that the media and material experts would validate the product. The final output is a vocabulary worksheet that junior high school students can use with the Wordwall app. The worksheet was created to offer organized vocabulary-learning exercises with interactive online games. The worksheet was divided into several sections, such as the cover page, table of contents, learning objectives, vocabulary materials, learning materials, learning materials, learning materials, learning materials, learning materials, learning activities, and interactive exercises. The activities are intended to introduce and practice vocabulary associated with procedure texts, including action verbs, tools and sequence words. Additionally, the worksheet contains several Wordwall exercises to give students engaging vocabulary practice. The various game templates used in the Wordwall exercises are chosen according to the vocabulary being practiced and the learning objectives. These activities allow students to practice vocabulary in a more engaging learning setting while also receiving feedback. The worksheets QR codes and links demonstrate how the worksheet and Wordwall are integrated. Students can use the given link to access the matching Wordwall activity by following the directions in the worksheet. As a result, Wordwall offers interactive practice exercises, and the worksheet serves as an organized learning guide. This integration enables the developed product to integrate game-based digital learning with printed/digital worksheet activities into a single learning resource.



Figure 6. Worksheet before Revision

Figure 6. shows worksheet before revision. The worksheet's first version was designed from activity pages that included procedure text, supporting picture, and vocabulary related exercises. However, the layout still needed to be improved, especially in terms of page organization.



Figure 7. Worksheet after Revision

Based on the revision suggestions, several changes were made, such as rearranging the worksheet's components and adding a distinct page for the interactive activities. To make Wordwall activities easier to access, the QR codes were also arranged on the extra page. The goal of these changes was to make the worksheet more structured, readable, and userfriendly for students. The second part of figure shows the revised worksheets after revision, which included a table of contents and supported the tasks.

d) Implementation

After the revision is complete, the researcher distributes the prepared worksheets in the classroom. The implementation was conducted with 32 ninth-grade students at SMP Negeri 1 Cisarua. The participants in this study were selected through purposive sampling. This class was chosen because it represented the target users of developed product, as identified from the need analysis and recommendations from the English teacher. Therefore, this class seemed suitable for the implementation and evaluation of developed products. To ensure the vocabulary worksheets are convenient for students to use, the researcher first explains the material and then utilizes the worksheets to provide a step-by-step explanation of the processes. The Wordwall

templates incorporated in these worksheets include airplane, group sort, spin the wheel, complete the words and rank order.



Figure 8. The Implementation Stages in the Classroom

e) Evaluation

After the implementation, the researcher evaluated the worksheet used in the classroom and finalized the actual product. Once all stages were completed, the researcher collected data using Microsoft Excel to calculate results from classroom observations, as well as to assess the validity based on feedback from experts and students.

2. Feasibility of Developing Students' Worksheets Using Wordwall Application for Teaching Vocabulary in Junior High School

The purpose of the instrument validation sheets is to assess the products of feasibility as determined by the validator. The validator for this study are media experts and material experts, specifically English teachers from high schools. The Validation sheets consist of eight questions with five-point Likert scales to measure the responses. The Likert scales include 5 measurement scales: very good (5), good (4), fair (3), poor (2), and bad (1). The results of the validation are presented below:

Table. 1 The Results of Validation from The Expert

No	Assessment Aspects	Validator		Expected Score	Percentage
		1	2		
1	**Material**	**12**	**12**	**30**	**80%**
a.	The worksheet is aligned with the learning material.	4	4		
b.	The worksheet is aligned with the learning objectives.	4	4		
c.	The worksheet is appropriate for the basic competencies.	4	4		
2	**Illustration**	**10**	**10**	**20**	**100%**
a.	The worksheet provides illustrations they are appropriate to real-life situations.	5	5		

b.	The worksheet helps students visualize the objects.	5	5		
3	**Quality and Media Appearance**	**5**	**5**	**10**	**100%**
a.	The worksheet has an attractive appearance that captures students' attention.	5	5		
4	**Interesting Points**	**9**	**9**	**20**	**90%**
a.	The use of the worksheet application could reduce students' dependence on the teacher.	5	5		
b.	The use of the worksheet could help teachers explain the material in the classroom.	4	4		
Total Score		**36**	**36**	**80**	**90%**
Feasibility			90%		

The results show 90% from the validation of the experts, which the worksheets indicate as "Very Feasible". Based on the assessment table criteria.

The developed worksheet received an overall score of 90% in the validation results, indicating its high level of feasibility for usage in the learning process. The validators' positive evaluation of the worksheet's language, content, presentation and integration of Wordwall activities is shown in the score. The validators gave a few recommendations for development in addition to numerical ratings. Revisions were made based on feedback they provided to further develop the worksheet's overall layout, the activities, relevance with the learning material and instruction's clarity. The goal of these changes was to make the worksheet easier to use and make sure that the exercises were suitable for the students' learning objectives.

3. Students' Response to the Use of Developing Students' Worksheets Using Wordwall Application for Teaching Vocabulary in Junior High School

After the preliminary and main field test, the researcher distributed questionnaires to the students to collect data on their responses to the worksheets that had been developed. Questionnaires were distributed at the end of the implementation phase to assess the students' perceptions of the worksheets in terms of appeal, ease of use, and effectiveness in supporting vocabulary learning. The results are displayed on the table. 2.

Table. 2 The Results of Students' Questionnaire

No	Questions	Percentage
1.	Attractive worksheet design	85%
2.	The worksheet provided made me interested in learning.	84%
3.	The content of worksheets was easy to understand	83%

4.	I am happy to work on this given worksheet	78%
5.	The use of the worksheet in the procedure text material can improve my knowledge in the learning process	86%
6.	I enjoyed using the worksheets during the learning activities	83%
7.	The text provided were relevant with the material learned	89%
8.	The worksheet provided for the procedure text are not highly effective in the learning process	59%
9.	The worksheet positively perceived my vocabulary acquisition	83%
10.	The worksheet motivates me to acquire vocabulary from the English text	85%

$$P = \frac{1052}{1280} \times 100 = 82\%$$

Notes :
P = Percentage
f = Frequency
n = Total of Respons

Based on table. 4 above, that the results of the students' responses indicate a positive outcome, with an average questionnaire score of 82%, which reflects a rating of "very practical" on the indicator.

For the questionnaire statements, student MS responded for the Questionnaire No. 3 by saying, "Yes, because the worksheet is easy to fill in." For questionnaire No. 5 students' NP said, "Yes, because the worksheet is aligned with the content." In the questionnaire No.7, the student NF said, "This worksheet is already appropriate" and the questionnaire No.8 which the negative question from student MS, it was "No, because the text is already highly suitable."

Discussion

Based on the results of the study, it was found that the use of students' worksheets using the Wordwall application had a positive impact on vocabulary learning, particularly for 9th-grade students. The classroom observation results showed that all indicators on the observation sheet were achieved during the learning process. These results indicate that the students actively participated in the classroom activities and were able to follow the teacher's instructions. Nevertheless, during the preliminary test, the condition of the classroom did not seem conducive because the students were unfamiliar with the Wordwall application and had limited experience in using digital learning tools. Furthermore, the researcher does not set time limits to complete each activity, which was also a challenge for classroom management. To address these problems, several improvements were made before the main test. The researcher made the instructions clearer, set aside certain times for each activity, and gave more detailed instructions on how to use the worksheets. Therefore, the learning process ran smoothly in the next meeting or main test, with no chaos in the classroom. Before assigning the activity, the

researcher provides the students with clear instructions and specific time limits for each task. The students are also not afraid to ask the teacher when they do not understand. This indicates that the worksheet was successful in creating a stimulating learning environment.

The validation from the experts showed 90%, which is categorized as "very feasible," indicating that the content and appearance are highly suitable for the junior high school students. The worksheets can be used in the classroom to support the teaching-learning process. The material aspect received a score of 24 out of 30, reflecting an 80% percentage. The score shows that the worksheets were determined to be practicable and relevant to the learning objectives. The worksheets were viewed as appropriate and clear, as demonstrated by the illustration aspect, receiving the highest score of 100%. The worksheets overall visual presentation and media quality were viewed as extremely appropriate, as seen by the quality and media appearance factor receiving 100%. Meanwhile, the interesting feature received 18 out of 20, or 90%, showing that the worksheet was attractive and entertaining to the students.

Before these results were given, the researcher needed to revise the worksheet as the validator suggests; the researcher needs to make the worksheet more colorful, revise the worksheet pages, and make the teaching objective clearly. Before the final product is completed and used in the classroom, the validator provides feedback on it. First, the validator suggests the researcher change the content to reflect the actual time when it will be used. Also, the researcher suggested changing the content into the oriented version so that the students can understand better about the worksheets, adding pages and a table of contents so that students can find the pages align with the instructions from the teachers, and also giving more color in the worksheet, it should be colorful so that it can attract students' engagement. After the product is finally revised, the researcher continues to do the main test. In the main test, the researcher explained the material and gave instructions to the students, and the last step is giving questionnaires to know the response after using the worksheets in the teaching and learning.

The student responses questionnaire indicated that most students had a positive perception towards the Wordwall-based worksheets. The total response score was 82% which indicated that the students found the worksheet interesting, easy to use, and helpful to support vocabulary learning. The item received 59%, which is relatively lower compared to other items. However, the item was negative word or reverse scoring. The result should not be taken as meaning that the worksheet did not work. Rather, the response indicates that most students did not agree with the statement that the worksheet was not effective in the learning process. These means that the results still show a positive response to the use of the worksheet. The last question in the questionnaire got 85% which means most of the students agreed that the worksheets motivated them to improve their vocabulary mastery. The positive feedback given by students may be attributed to a combination of structured worksheet tasks and interactive Wordwall games. The worksheet had clear directions and arranged vocabulary assignments while Wordwall gave students a chance to learn vocabulary through interactive games. Classroom observations were more familiar with the learning activities during the main test. The preliminary test was less conductive because the students were more familiar with Wordwall and the instructions were not supported by the explicit time limitations, but the learning process became more organized in the main test after better instructions and time allocations were given. This may have resulted in positive responses to the produced worksheet. The results of this study are in line with other research on the use of digital worksheets and Wordwall in language learning. Weran et al. (2024) found positive findings from the usage of Wordwall in vocabulary learning, while Nurammida et al. (2024) discovered that Wordwall helped students vocabulary mastery.

Comparably, earlier research on digital worksheets showed positive results in terms of students' responses, validity, and practicality (Rahmayani & Atmazaki, 2025; Janah et al., 2025). These results are mostly in line with the current study, where students responded positively to the created worksheet and it obtained a 90% validation score. Previous study has been done on the use of Wordwall as a learning media, but this research is combined with a structured worksheet. The worksheet had learning materials, instructions and vocabulary exercises and Wordwall was used as the interactive part of vocabulary practice. The contribution of this study is in the combination of structured worksheet activities and game-based digital activities into one teaching material.

From an educational perspective, a Wordwall facilities vocabulary acquisition by giving students chances for interactive, repetitive vocabulary exercises. Through a variety of gamebased exercises, students in this study practiced vocabulary associated with process texts, such as actions verbs, materials, tools, and sequence words. Relative to traditional vocabulary exercises, the interactive format could be more interesting and motivate students to actively engage in the learning process. As a result, Wordwall served as both an additional exercise element in the worksheet and a digital game in this study. However, since an effectiveness test was not carried out, the positive answers and observation results should be considered as proof of the worksheet's validity and perspectives rather that proof that the product directly improved students' vocabulary achievement.

There are a few limitations to this study that should be considered. First, there was no experimental test to measure how well the worksheet improved students' vocabulary achievement because the study's primary focus was on the worksheet integrated with the Wordwall program. Second, the results may not apply to students in other schools or learning environments because the implementation only included a small number of students and was carried out in a single school. Third, expert validation, classroom observations and students' responses, which primarily detail the products' feasibility and judgements were used to evaluate the created worksheet. Therefore, more study is advised to assess the worksheets effectiveness through experimental trials using a larger number of subjects of the study.

CONCLUSION

The aim of this study was to develop a Wordwall-based worksheet for teaching vocabulary for junior high school students based on the ADDIE model. The positive evaluation from expert validators and students' responses indicate the feasibility of using the developed worksheet for vocabulary instruction. Therefore, it can be said that the worksheet is suitable teaching material to assist vocabulary learning in junior high school. The main contribution of this study is the development of a worksheet based on Wordwall that combines structured vocabulary learning activities and interactive digital games in a single teaching material to help the English teachers to design more engaging and technology-integrated vocabulary lessons to introduce the students to the meaningful educational technology that is in line with the characteristics of today's digital generation.

The developed worksheet has the potential to be used as supplementary teaching material for the English subject in junior high school. It provides teachers with an alternative resource to encourage active participation from students and make the learning environment more engaging

by combining structured vocabulary activities and interactive Wordwall games. Since the present study focused on product development and feasibility, it is suggested that future research should investigate the effectiveness of the worksheet in improving students' vocabulary achievement through experimental studies with larger and more diverse samples.

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