

## DEVELOPING LEARNING MEDIA OF CROSSWORD PUZZLE TO IMPROVE STUDENTS' VOCABULARY

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### Abstract

The objectives of this research are 1) to develop learning media for crossword puzzles to improve vocabulary; 2) to determine the feasibility of learning media for crossword puzzles to improve vocabulary from material experts and media experts; and 3) to know the effectiveness of developing learning media for crossword puzzles to improve students' vocabulary. The type of research used is research and development (R&D). The method used is the ADDIE development method. The research subjects involved are eighth-grade students of Darul A'mal Metro MTs, for a total of 15 students. Based on the results of the research, it can be concluded that the learning medium of crossword puzzles to improve students' vocabulary is effectively used in the teaching and learning process based on the N-Gain Score scores obtained with a score of 1 in the high category.

**Keywords:** Crossword Puzzle, Learning Media, Vocabulary.

## INTRODUCTION

Vocabulary is one of the important components of learning English. Having a vocabulary helps students learn four language skills: reading, writing, listening, and speaking. Wilkins, as cited in Thornbury (2002), asserted that without grammar, minimal information can be communicated, and without words, no information can be conveyed. Suggesting that words are very important to communicate. Students who have sufficient vocabulary can write and speak well (Prihastuti, 2017). As Tiansoodeenon et al. (2023) emphasized, vocabulary is essential for language learning and use, profoundly affecting a learner's capacity to understand and generate language proficiently. Mastery of vocabulary improves communication abilities, enriches comprehension, and is essential for evaluating language competency levels. The mastery of vocabulary is also essential for academic achievement, facilitating students' comprehension of reading materials, effective articulation of concepts in writing, and active engagement in oral communication. This underscores the interdependent relationship between vocabulary, general language proficiency, and lifelong learning. Therefore, focusing on vocabulary enhancement becomes a critical element of English language instruction, paving the way for effective communication across all skills.

Crossword puzzles, often known as crossword puzzles or TTS for short, are games that are given to students to help them remember the content they have studied and to help them become more accurate or foresighted in their solution choices so that their approach can get better academic success as well as pupils' command of vocabulary. Students become more engaged when learning using crossword media because they are forced to think outside the box to solve problems and modify their solutions to fit the given answer columns. This aligns with the findings of Nguyen et al. (2023), who noted that interactive components in education, like quizzes and games, markedly enhance language memory. Gamified learning enhanced learners' comprehension and retention of lecture concepts more effectively than conventional teaching

approaches. Moreover, crossword puzzles not only engage students but also provide them with an enjoyable and challenging medium to reinforce vocabulary learning, linking directly to critical thinking skills. In addition, the incorporation of crossword puzzles into language instruction corresponds with contemporary educational strategies that prioritize learner-centered and participatory procedures. These tools facilitate language skill acquisition and augment students' intrinsic motivation, so rendering the learning process more gratifying and significant.

Indirectly, using these learning resources will force students to utilize more critical thinking skills to participate actively in class discussions and to look more closely for solutions. Furthermore, learners can enjoy studying with the help of this crossword learning resource (Khasanah et al., 2023). Research by Alsoufi and AbuSeileek (2021) supports this, stating that Games not only incentivize learners but also establish stimulating environments for language acquisition. They discovered that regular gaming techniques were utilized often and were very efficient in engaging learners. Therefore, games like as crosswords not only incentivize learners but also establish significant settings for language acquisition, thereby augmenting critical thinking and problem-solving abilities. These findings correspond with the tenets of constructivist learning, which promote the implementation of interesting and significant activities necessitating active learner involvement and collaboration. Crossword puzzles foster problem-solving and analytical skills, offering students a distinctive opportunity to utilize their language knowledge in practical and interactive manners, thus reinforcing their learning outcomes. Consequently, employing crossword puzzles in vocabulary instruction enhances linguistic proficiency while simultaneously providing pupils with crucial cognitive skills necessary for academic achievement.

Prihastuti (2017) found in her research that the validation of presentation materials achieved a score of 82%. Since this percentage falls within the range of 75%-84%, it can be concluded that the learning material, which is based on a crossword puzzle for English vocabulary in class III, meets good criteria. Furthermore, validation by media experts resulted in a score of 85%, which, according to the presentation assessment guidelines, falls within the excellent range of 85%-100%. Consequently, the validation by media experts is categorized as excellent. The development of English vocabulary learning media, as presented in the study, showed satisfactory results. This is evident from the pretest and posttest results, which demonstrate an improvement, with students' scores surpassing the KKM (Minimum Competency Criteria).

Seeing from the teacher's response and student response shows a good result the response given shows that the use of TTS (Crossword Puzzle Media) gives motivation and enthusiasm students in following learning. Based on the observations made by the teacher can be concluded that the media used can give the student the spirit to follow learning, so the conclusion of this study is that the medium used can be said worthy to be used as a learning medium (Prihastuti, 2017). Similar conclusions were drawn by Hidayat (2023), who found Crossword puzzles challenge students to think critically about word meanings, synonyms, and context, which can lead to substantial vocabulary growth. Research shows that students who regularly engage with crossword puzzles exhibit marked improvements in their vocabulary proficiency, as evidenced by higher post-test scores compared to pre-tests after participating in crossword sessions. This prior study emphasizes the effectiveness of interactive and engaging media, such as crossword puzzles, in enhancing students' vocabulary skills. The integration of crossword puzzles into the learning process not only stimulates critical thinking but also fosters active participation and motivation among students.

Building on these findings, the current study underscores the potential of TTS as a practical and beneficial tool for vocabulary development. The positive responses from both teachers and students confirm its relevance and appeal, making it a viable option for diverse educational contexts. Additionally, the observed improvements in students' vocabulary mastery align with the notion that learning through games and interactive media can make the learning process more enjoyable and impactful.

Based on the relevant research above, the similarity to the current research that the researchers studied is the same in using the crossword puzzle to teach vocabulary so that it can increase students' interest in learning. However, the difference is that the product focuses on a specific material namely present continuous tense that is filled with formulas on each question and keyword along with phonetic symbols. Consequently, this research aims to bridge the gap by creating a more targeted and context-specific learning tool, offering a unique contribution to the existing literature on vocabulary instruction. This targeted approach ensures that the learning media developed are tailored to the cognitive and linguistic needs of the learners, maximizing their potential for vocabulary acquisition.

The objectives of this research include the availability of developing learning media of crossword puzzle to improve students' vocabulary and knowing the feasibility of developing learning media of crossword puzzle to improve students' vocabulary of eighth-grade students. Additionally, this research aims to contribute to existing studies by demonstrating how structured and context-specific crossword puzzles can improve vocabulary retention and student motivation. Ultimately, this research seeks to validate the feasibility and effectiveness of crossword puzzles as an innovative medium for teaching vocabulary, particularly in the context of eighth-grade students.

## **METHOD**

The type of research in this study employs the research and development method (Research and Development), which aims to produce specific products. The product produced from this research is teaching vocabulary with crossword puzzle. This method involves a systematic process to design, develop, and evaluate learning tools to ensure their effectiveness in achieving educational objectives (Gall et al., 2007). The development in this research used the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). Researchers chose this model because it was easy to understand and developed systematically based on the basis of the design developed (Maydiantoro, 2021). The ADDIE model ensures a structured approach to identifying learning needs, designing the product, creating prototypes, testing in the field, and refining the product based on feedback.

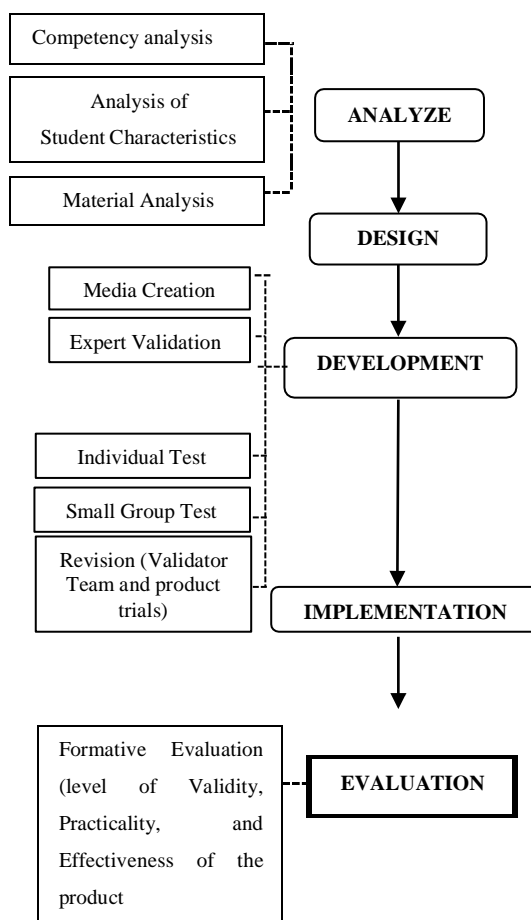


Figure 1. Research Step (Addie’s model)

The research subjects involved were eighth-grade students of Darul A’mal Metro MTs, totaling 15 students. These participants were chosen to represent the target audience for the learning media and to provide practical insights during the product's development and implementation stages. The study emphasized iterative testing and revision based on student feedback to ensure that the crossword puzzle aligns with the students' needs and abilities. Data were collected through pretests, posttests, and observations to evaluate the effectiveness of the product in improving students' vocabulary mastery and engagement.

To measure the effectiveness of the crossword puzzle learning media, the researchers used the N-Gain test with the formula:

$$N - Gain = \frac{\text{Posttest score} - \text{Pretest score}}{\text{Ideal score} - \text{Pretest score}}$$

The N-Gain test is performed by calculating the difference between the pretest value (test before applying the crossword puzzle learning media) and the posttest value, as shown in Table 3.

Table 1. Gain Score Criteria

Score N- Gain	Category
$g > 0.7$	High
$0.3 < g < 0.7$	Medium
$g < 0.3$	Low

(Hake, 1999)

## FINDINGS AND DISCUSSION

### Findings

#### a. Qualification of Matter

Based on the validation of the presentation material, a score of 88.5% was obtained. Since the total percentage falls between 81% and 100%, it can be concluded that, in the aspect of learning material, the crossword puzzle for English lesson material on the present continuous tense meets the criteria of being very valid. The validation process involved a thorough review by material experts, who evaluated the relevance, accuracy, and clarity of the content. These experts provided insights on aligning the material with the educational objectives for eighth-grade students, ensuring that it not only adheres to the curriculum but also meets the diverse learning needs of the students. The validation process involved experts in English education to ensure that the content was accurate, relevant, and aligned with the students' learning objectives. Additionally, the material was tested to confirm its alignment with curriculum standards and its ability to promote vocabulary retention.

Table 2. Material Expert Validation Results

No	Aspect	Criteria	Score	Percentage (%)
1	Customize Material	a. Material conformity with KI	4	80
		b. Material compatibility with KD.	4	80
2	Matter Accuracy	a. Accuracy of concepts and definitions.	5	100
		b. Accuracy of matters and examples.	5	100
		c. Image accuracy.	4	80
3	Matter Updates	a. Use of examples relating to everyday life.	4	80
		b. The use of matters that have to do with everyday life.	5	100
<b>Total</b>				<b>620</b>
<b>Mean</b>				<b>88.5</b>

#### b. Qualification of Media

Based on the validation of the presentation media, a score of 93.3% was obtained. Since the total percentage falls between 81% and 100%, it can be concluded that, in the aspect of learning media, the crossword puzzle for English lesson material on the present continuous tense meets the criteria of being very valid. The media underwent multiple revisions based on expert feedback to improve its usability, visual appeal, and effectiveness. Experts emphasized the importance of interactive features, such as hints and visual aids, which were subsequently incorporated to enhance user engagement. These elements made the crossword puzzles more intuitive and accessible to students with varying levels of proficiency. It was also reviewed to ensure it met technical and pedagogical standards, contributing to a more engaging and interactive learning experience for students.

Moreover, the media was subjected to a usability test with a smaller group of students before broader implementation. This pilot test provided valuable insights into its functionality and the students' response to the design and content. The findings demonstrated that the interactive nature of the crossword puzzle stimulated student interest and encouraged independent problem-solving, which is crucial for active learning.

Table 3. Media Expert Validation Results

No	Aspects Assessed	Score	Percentage ( % )
<b>Material</b>			
1	a. Media Crossword Puzzle used in accordance with the learning material.	5	100
	b. Media Crossword Puzzle used for learning purposes.	4	80
	c. Use of the Crossword Puzzle used in accordance with the Basic Competence.	5	100
<b>Illustration</b>			
2	a. The crossword puzzle media used can provide an illustration that matches the actual circumstances.	4	80
	b. Media Crossword Puzzle can make it easier for students to frame available images.	5	100
<b>Media Quality and Display</b>			
3	a. Media appearance Crossword Puzzle attracted the attention of students.	5	100
	b. Media Crossword Puzzle is easy to use and is not easily damaged.	5	100
<b>Traction</b>			
4	a. The use of Media Crossword Puzzle can reduce the student's dependence on the teacher.	4	80
	b. The use of Media Crossword Puzzle can minimize the misperception that occurs in students.	5	100
<b>Total</b>			<b>840</b>
<b>Mean</b>			<b>93.3</b>

### c. Qualification Based on Pretest and Posttest

Results of learning media effectiveness of crossword puzzle to improve students' vocabulary can be seen in Table 4.

Table 4. Results of Learning Media Effectiveness of Crossword Puzzle to Improve Students' Vocabulary

No	Student	Score		Post - Pre	Ideal Score (100 Pro )	N Gain Score	N Gain Score ( % )
		Pretest	Posttest				
1	AD	80	100	20	20	1	100
2	AW	80	100	20	20	1	100
3	JA	79	100	21	21	1	100
4	KA	79	100	21	21	1	100
5	LA	79	100	21	21	1	100
6	MAP	82	100	18	18	1	100
7	MF	79	100	21	21	1	100
8	MGB	79	100	21	21	1	100
9	MRM	80	100	20	20	1	100
10	MSA	80	100	20	20	1	100
11	NJ	79	100	21	21	1	100
12	RA	81	100	19	19	1	100
13	RAS	81	100	19	19	1	100
14	RAD	79	100	21	21	1	100
15	RF	79	100	21	21	1	100
<b>Mean</b>		<b>79.73</b>	<b>100</b>	<b>20.27</b>	<b>20.27</b>	<b>1</b>	<b>100</b>
<b>Category</b>						<b>High</b>	

Based on the criteria of students' responses to the field test, this yielded an average score of 79.7 for the pretest and 100 for the posttest, which indicated that the student's vocabulary improved after using crossword puzzle media. For N-Gain scores obtained a score of 1 which belongs in the high category and is effective for improving the English vocabulary of students. Based on the results of the above calculations suggests that the media game crossword puzzle can improve the student's vocabulary. This improvement was particularly evident in students' ability to recognize and use vocabulary related to the present continuous tense in sentences. The exercises included in the crossword puzzles encouraged students to actively recall and apply their knowledge, thereby solidifying their understanding of the material.

This improvement highlights the media's potential as an effective tool for fostering vocabulary acquisition. The pretest and posttest scores were analyzed using N-Gain, which showed a score of 1, placing it in the high category and confirming its effectiveness in enhancing students' vocabulary mastery. Additionally, teacher feedback indicated that the students demonstrated greater confidence and enthusiasm in class activities after using the crossword puzzle media. This aligns with the findings of Reinders (2017), who highlighted the motivational aspect of educational games in language learning.

Based on the above findings, it can be concluded that the crossword puzzle media effectively improves students' vocabulary and is highly suitable for classroom implementation. First, the validation of the material achieved a score of 88.5%, indicating that the content is accurate, relevant, and meets the curriculum standards, ensuring students can effectively learn the present continuous tense. Second, the media received a score of 93.3%, demonstrating its high usability, visual appeal, and capability to engage students actively in the learning process. Finally, the results of the pretest and posttest, with an N-Gain score of 1, confirm the media's significant impact on improving students' vocabulary mastery, positioning it as an effective and innovative educational tool.

## Discussion

The primary objectives of this research were to develop a learning media in the form of a crossword puzzle to improve students' vocabulary and to evaluate its feasibility and effectiveness. The research utilized the ADDIE development model, emphasizing systematic analysis, design, development, implementation, and evaluation. This methodological approach ensured a structured and iterative process that prioritized both pedagogical goals and practical usability. The findings confirm that this objective was successfully achieved through the validation of material and media as well as the significant improvement in students' vocabulary performance.

The validation results for the crossword puzzle material achieved a score of 88.5%, placing it in the "very valid" category. This demonstrates that the content aligns with curriculum standards and supports students' understanding of the present continuous tense. The incorporation of phonetic symbols not only facilitated pronunciation accuracy but also introduced students to a critical aspect of vocabulary acquisition often overlooked in traditional approaches. The incorporation of phonetic symbols not only facilitated pronunciation accuracy but also introduced students to a critical aspect of vocabulary acquisition often overlooked in traditional approaches. By incorporating phonetic symbols and formula-based questions, the material catered to both linguistic and cognitive learning needs, enhancing students' grasp of vocabulary in context. These findings support prior research by Astra et al. (2019), which emphasized that well-structured content in educational media significantly contributes to learning outcomes. Additionally, Barjesteh and Omran (2019) and Mohammadi et al. (2020) highlight the importance of contextualized vocabulary instruction in fostering long-term

retention, aligning with this study's findings. These researchers found that learners exposed to contextualized vocabulary instruction exhibit significantly better vocabulary retention compared to those who receive decontextualized instruction. The alignment with these established theories further validates the robustness of the crossword puzzle material in addressing vocabulary learning challenges.

The media validation score of 93.3% underscores its efficacy in promoting active and enjoyable learning. Designed to be visually appealing and user-friendly, the crossword puzzle engaged students in problem-solving and critical thinking. The interactive features, including the use of contextual hints and visually stimulating elements, ensured that students remained motivated and focused throughout the learning process. This aligns with the development stage of the ADDIE model, where iterative testing and expert feedback ensure the final product meets both pedagogical and technical standards. Similar findings by Waluyo et al. (2023) affirm the role of gamified learning media that leads to higher levels of student engagement. Moreover, research by Kurdi (2023) emphasizes that visually engaging media can capture learners' attention more effectively than traditional text-based materials and encourage learners to participate in the learning process actively. These findings underscore the importance of combining visual media and gamified learning strategies to create engaging and impactful educational experiences.

The students' pretest and posttest scores provide compelling evidence of the crossword puzzle media's effectiveness. With an average pretest score of 79.7 and a posttest score of 100, the improvement highlights the media's ability to enhance vocabulary retention while fostering enthusiasm for learning. The N-Gain score of 1 further confirms its high effectiveness, placing it in the "high" category. Such dramatic improvement in students' performance indicates the media's success in transforming passive learning into an active, engaging experience. These findings are consistent with studies by Bisson et al. (2014), who emphasizes that repeated exposure to vocabulary in multimodal contexts (e.g., auditory, visual) significantly aids in incidental vocabulary acquisition. Furthermore, Ghali et al. (2014) state that games designed with motivational strategies can improve engagement and promote skill acquisition, which aligns with the observed improvements in students' performance. The crossword puzzle media's ability to integrate these principles highlights its potential as a scalable solution for language education.

The research successfully followed the ADDIE model, demonstrating a comprehensive and iterative development process. The analysis phase identified vocabulary improvement as a critical need, while the design and development phases produced a targeted media solution tailored to address this need. During the implementation phase, students actively engaged with the crossword puzzles, reflecting the media's practical applicability and alignment with real classroom settings. The evaluation phase, through expert validation and pretest-posttest analysis, confirmed the media's feasibility and effectiveness. As Suratnu (2023) and Wulandari et al. (2024) assert, the systematic nature of the ADDIE model facilitates a thorough evaluation process, enabling the development of instructional modules that improve student skill mastery and support educators in creating engaging, tailored learning experiences, ultimately enhancing learning outcomes. Moreover, its iterative approach facilitates the identification of deficiencies in knowledge and performance, enabling ongoing enhancement of teaching methods and materials (Labuschagne et al., 2023). These studies exemplify how the ADDIE model can serve as a robust framework for developing educational tools that address specific learning objectives effectively.

The success of the crossword puzzle media suggests its potential for broader application. Not only can this approach be adapted to other topics or language skills, but it also aligns with 21st-century learning principles that emphasize critical thinking, collaboration, and

creativity. This research also highlights the importance of integrating formative assessment tools within gamified learning environments to provide ongoing feedback and monitor progress. Such an approach not only supports individual learning trajectories but also fosters a culture of self-directed learning among students. This research highlights that such innovations can address common challenges in language classrooms, such as low motivation and limited vocabulary retention. Future research could explore the adaptability of crossword puzzle media for other linguistic competencies, such as writing or speaking, further extending its applicability and impact in language education.

## CONCLUSION

Based on the results, it can be concluded that learning media of crossword puzzles to improve students' vocabulary is used effectively in the teaching-learning process. This is evident from the N-Gain Score, which yielded a score of 1 in the high category, indicating that the media had a significant impact on improving students' vocabulary acquisition. The use of crossword puzzles successfully engaged students, fostering an interactive and motivating learning environment, which aligns with previous research on the effectiveness of gamified learning tools. The researchers conducted limited research only at the Darul A'mal Metro MTs with a total of 15 students in the eighth grade. It is recommended that future research expand to larger sample sizes and diverse educational contexts to further validate the effectiveness of crossword puzzle media in enhancing vocabulary skills.

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