

Development of Magic Puzzle Learning Media for Vocabulary Mastery among Elementary School Students

Bq Ingesh Nastriana Intan Nursyafitri ^{1*}, Rusmin Husain ², Fidyawati Monoarfa ³,
Wiwy Triyanty Pulukadang ⁴, Ade Mahniar ⁵

Correspondensi Author

^{1, 2, 3, 4, 5} Primary School Teacher
Education, Faculty of Education,
Universitas Negeri Gorontalo,
Indonesia

Email:

intannursyafitri603@gmail.com
rusmin.husain@ung.ac.id
fidyamonoarfa@ung.ac.id
wiwy.pulukadang@ung.ac.id
ademahniar@ung.ac.id

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Abstract. The urgency of this research is to develop engaging Magic Puzzle learning media to enhance elementary school students' vocabulary mastery. The development of the Magic Puzzle learning media was carried out as an effort to provide an engaging learning medium that meets the vocabulary learning needs of second-grade elementary school students. This study employed the Research and Development (R&D) method using the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The research was conducted at SDN 7 Tilango, Gorontalo Regency, with second-grade students as the research subjects. The development results showed that the Magic Puzzle learning media achieved an average feasibility score of 93.33% based on assessments by media, material, and language experts, placing it in the very feasible category. The practicality of the media was assessed through teacher and student responses. The questionnaire results showed that the teacher response reached 92.5%, while the student response was 92.6%, both of which were categorized as very practical. Based on these findings, the Magic Puzzle learning media met the criteria of feasibility and practicality and can be used as an alternative learning medium to support vocabulary mastery among second-grade elementary school students.

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Introduction

Indonesian has an important role in elementary school education because it contributes to the development of students' abilities and competencies. Through Indonesian language learning, students are guided to develop both oral and written communication skills. Students are expected to use language appropriately and improve their ability to understand and obtain various forms of information (Dehiyo et al., 2025). Adequate vocabulary mastery facilitates the comprehension of information and the effective expression of ideas in communication (Andriana et al. 2023). Language learning is also expected to develop students' ability to express ideas and feelings while optimizing their individual potential (Aprilianti et al., 2025).

Language skills in the school curriculum include listening, speaking, reading, and writing (Khoirina et al., 2023). In practice, however, students still face various

difficulties in vocabulary mastery. These difficulties can be observed in students' limited ability to understand the meaning or content of reading texts. Limited ability to express ideas and feelings orally and in writing may also negatively affect academic achievement. These conditions indicate that vocabulary mastery is an important aspect that requires attention in the learning process (Nabilah et al., 2024). When learning new vocabulary, some students tend to listen quietly and focus on the information presented (Maharani et al., 2026). This suggests that connecting input obtained through purposeful listening activities can support vocabulary acquisition more effectively (Damiatik et al., 2024).

Based on an interview with the second-grade classroom teacher, students' vocabulary mastery was identified as an area that still needed improvement (Noviana et al., 2026). Although most students were able to read vocabulary items fluently, several students continued to experience difficulties in reading words. The classroom teacher explained that vocabulary instruction had used several learning resources, including word cards, letter cards, and lecture-based instruction. The teacher also noted that lower-grade students still required engaging learning media to help them understand the material more easily. Based on these problems, the researchers developed Magic Puzzle as a learning medium to support vocabulary mastery among second-grade elementary school students.

This medium is expected to help students expand their vocabulary, improve their ability to construct sentences, and support a more active and enjoyable learning process. The more vocabulary an individual masters, the greater the ability to use language and develop language skills (Mardayanti et al., 2025). In general, learning media function as communication supports that can help teachers convey learning material more effectively (Maharani et al., 2024). At the elementary school level, play remains an important part of the learning process for second-grade students aged approximately 6-7 years. Therefore, Magic Puzzle can serve as a learning medium that enables students to learn through developmentally appropriate activities (Andryani & Rahmi 2025). Engaging learning through the use of appropriate media may help address limited vocabulary mastery, which can also be influenced by students' learning environments (Walida, 2023). In this study, Magic Puzzle is defined as a game-based learning medium consisting of puzzle pieces and picture cards. The medium is designed to help students recognize vocabulary and understand word meanings through arranging and matching activities. Puzzles can be used as a learning strategy because they allow students to participate actively in learning activities without compromising the intended learning objectives (Ramadhani et al. 2025).

This study is limited to the development of Magic Puzzle for Indonesian vocabulary learning among second-grade students at SDN 7 Tilango, Gorontalo Regency. The study does not focus on testing media effectiveness through an experiment or comparing learning outcomes with a control group. Instead, it aims to produce a learning medium that meets feasibility and practicality criteria for use in vocabulary instruction. The distinctive focus of this study is the development of Magic Puzzle to support second-grade students' vocabulary mastery by integrating puzzle pieces, picture cards, and vocabulary items. Thus, this study is expected to provide an alternative for developing concrete and interactive Indonesian language learning media that are appropriate for the learning needs of second-grade students. The novelty of this research lies in the development of Magic Puzzle learning media that combines interactive puzzle activities

with vocabulary learning, providing an engaging, hands-on, and student-centered approach to strengthen vocabulary mastery among elementary school students.

Method

This study employed a Research and Development (R&D) approach (Kaharudin et al. 2025). The research was conducted at SDN 7 Tilango, Gorontalo Regency, during the first semester of the 2026/2027 academic year. The research participants included the second-grade teacher and students at SDN 7 Tilango. A total of 25 second-grade students participated as respondents to provide information regarding their responses to the use of Magic Puzzle as a medium intended to support vocabulary mastery.

The research instruments consisted of an observation sheet, an interview guide, expert validation sheets, teacher and student response questionnaires, and documentation. The interview guide was used to obtain information about the learning process and the need for instructional media. Expert validation sheets were used to assess the feasibility of the media in terms of media design, subject matter, and language. Teacher and student response questionnaires were used to determine the practicality of Magic Puzzle after its implementation in learning activities. Documentation served as supplementary data and included photographs of the research activities, development process, and use of the media.

Data were collected through observation, interviews, questionnaires, and documentation. Observation was conducted to obtain preliminary information about problems at SDN 7 Tilango and to identify the issue to be investigated. Interviews were conducted by asking the teacher questions related to the learning process and students' needs. Questionnaires were administered to media, subject matter, and language experts to obtain their evaluations, and to the classroom teacher and students to obtain responses to the developed Magic Puzzle medium. Documentation was used as supporting evidence for the research activities. Data from the feasibility and practicality assessment questionnaires were analyzed using a Likert scale.

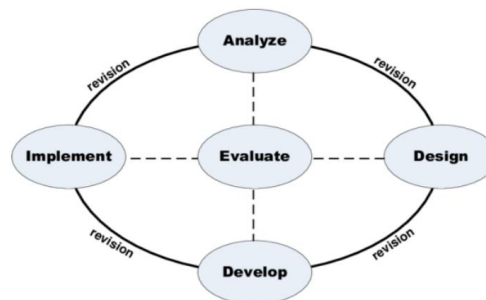


Figure 1. *Research and Development Stages*

The analysis stage involved identifying learning needs as the basis for development. This stage aimed to determine the learning needs of second-grade students so that the medium to be developed would be appropriate for those needs. The design stage involved planning the learning medium based on the results of the needs analysis. The researchers determined the learning objectives, content to be included in the medium, shape and dimensions of the medium, visual design, and required components. Research instruments, including expert validation sheets and teacher and student response questionnaires, were also prepared at this stage. The development stage involved transforming the initial design into a product that could be used in learning activities. The researchers produced the medium according to the established design, including the

puzzle board, letter puzzle pieces, picture cards, and adjustments to color, size, and layout. After the product had been developed, it was validated by media, subject matter, and language experts to assess its feasibility before classroom implementation. The implementation stage involved using the validated learning medium in classroom learning activities. Data were collected through teacher and student response questionnaires and were used to determine the practicality of the developed medium. The evaluation stage assessed the developed medium based on the feasibility and practicality data obtained. Revisions were made based on these results so that the medium could meet the criteria for feasible and practical use in learning.

Results and Discussion

This study developed Magic Puzzle as a learning medium intended to support vocabulary mastery among elementary school students. Through enjoyable puzzle-arranging activities, students were expected to recognize and understand vocabulary more easily. Students also appeared more active, enthusiastic, and motivated to participate in learning activities. The development process applied the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

Initial Condition of Vocabulary Mastery

Based on an interview with the second-grade classroom teacher at SDN 7 Tilango, the learning media used by the teacher were still largely limited to resources available in the school library and lacked variety, so they did not fully accommodate students' diverse learning needs. During classroom learning, not all students actively participated in learning activities. Students tended to receive information from the teacher and complete assigned tasks. This condition limited their opportunities to understand and actively use vocabulary. In addition, the available media were used only for certain activities and were not yet accompanied by activities that encouraged students to understand word meanings. Appropriate learning media can support the achievement of learning objectives (Wulandari et al., 2023). Therefore, the researchers developed Magic Puzzle as an alternative learning medium that provides students with opportunities to recognize, understand, and master vocabulary through interactive learning activities.

Development of Magic Puzzle Learning Media

In this development study, the researchers used the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation (Judijanto et al., 2024).

At the Analysis stage, the researchers identified learning needs as the basis for product development. The learning media used by the teacher were still limited to materials available in the school library and were not sufficiently varied. Consequently, the learning process did not fully address the diverse characteristics and abilities of students. Another identified problem was limited vocabulary mastery. Some students had difficulty understanding the meanings of the vocabulary being learned and were not yet able to use appropriate vocabulary in communication. Students also frequently used regional or informal everyday language, indicating that their ability to use standard Indonesian appropriately had not developed optimally. Therefore, a learning medium was needed not only to deliver content but also to create an enjoyable and interactive learning environment that encouraged active participation. Learning media are

particularly helpful for supporting students' understanding of concepts because children at this age are still predominantly concrete thinkers (Bakara, 2023).

Based on these needs, the researchers developed Magic Puzzle as an alternative learning medium to support students' vocabulary mastery. The medium was designed by combining elements of play and learning so that students could learn while playing. Through arranging puzzle pieces, matching pictures with vocabulary, and finding answers independently or collaboratively, students could obtain more concrete and meaningful learning experiences.

At the Design stage, the researchers determined the learning content to be included in the medium based on the learning objectives in the curriculum implemented at the school. Connections among learning materials can form an integrated whole and allow students to acquire knowledge comprehensively. After the content was determined, the researchers identified the types of vocabulary to be included, such as nouns, verbs, and adjectives that were closely related to students' daily lives and therefore easier to understand and learn.

After determining the content and concept of the medium, the researchers prepared an initial Magic Puzzle design, including the dimensions of the board and puzzle pieces, number of pieces, arrangement of pictures and vocabulary, color selection, font type, and other supporting components. The media design process was carried out using Canva.



Figure 2. Puzzle Piece Design

Puzzle pieces are the main component of Magic Puzzle and serve as a tool for vocabulary learning. Each piece contains letters representing particular vocabulary items, including nouns, verbs, and adjectives. Students arrange and match the pieces. During use, students observe the letters on each puzzle piece, identify the corresponding pieces, and arrange them to form a correct word.



Figure 3. Picture Card Design

The picture cards contain illustrations of objects, activities, or attributes corresponding to the vocabulary and consist of 50 cards. Each picture card helps students recognize word meanings visually, making it easier for them to identify the appropriate vocabulary. The picture cards were designed using engaging colors and illustrations.

At the Development stage, the Magic Puzzle design was transformed into a product that could be used in learning activities. Development itself involves a series of steps to create a product or improve an existing product (Okpatrioka 2023). The development process included producing the medium according to the design, including the puzzle board, letter puzzle pieces, picture cards, and adjustments to color, size, and layout. After the medium had been produced, validation was conducted to determine its feasibility before classroom use. Validation was carried out by a media expert, a subject matter expert, and a language expert.

The next stage was Implementation, in which the developed product was applied in classroom learning activities after it had been validated and declared feasible for use. The implementation was conducted with 25 second-grade students. At this stage, the researchers conducted a limited trial of Magic Puzzle in Indonesian language learning, specifically for vocabulary material covering nouns, verbs, and adjectives. The learning activities were carried out with the assistance of the classroom teacher, who served as an observer and supported the researchers throughout the learning process.

Evaluation was the final stage of the ADDIE development process, and formative evaluation was used in this study. Magic Puzzle was evaluated based on validation results from media, subject matter, and language experts to assess feasibility, as well as through a limited trial with second-grade students at SDN 7 Tilango to assess practicality. Revisions were made based on these results so that Magic Puzzle could be used as a feasible and practical learning medium.

Feasibility of Magic Puzzle Learning Media

Table 1. Summary of Magic Puzzle Feasibility Assessment by Validators

No	Validation Type	Feasibility (%)	Category
1	Media Expert	92.5%	Highly Feasible
2	Subject Matter Expert	95%	Highly Feasible
3	Language Expert	92.5%	Highly Feasible
		93.33%	Highly Feasible

Based on the feasibility validation conducted by the media, subject matter, and language experts, the average percentage score was 93.33%, which was categorized as highly feasible. The assessment results indicate that Magic Puzzle meets the feasibility criteria for use as a learning medium to support students' vocabulary mastery.

Practicality of Magic Puzzle Learning Media

Practicality data were obtained through teacher and student response questionnaires after the medium had been used in learning activities. A limited trial was conducted to obtain an overview of the use of Magic Puzzle in the learning process. The trial was conducted by the researchers in one meeting with the assistance of the second-grade classroom teacher. The assessment results regarding the practicality of Magic Puzzle based on teacher and student responses are presented in the following table:

Table 2. *Summary of Magic Puzzle Practicality Assessment by Teacher and Students*

No	Validation Type	Feasibility (%)	Category
1	Media Practicality (Teacher)	92.5%	Highly Practical
2	Media Practicality (Students)	92.6%	Highly Practical
	92.55%		Highly Practical

Based on the practicality assessment obtained from teacher and student responses, Magic Puzzle achieved an average practicality score of 92.55%, which was categorized as highly practical.

The findings show that the development of Magic Puzzle was motivated by learning needs identified through an interview with the second-grade classroom teacher. Some students still experienced difficulties reading vocabulary, understanding word meanings, and using appropriate Indonesian vocabulary. The use of nonstandard language was also still found in students' everyday communication. Limited vocabulary mastery and insufficient strategies for acquiring new vocabulary may hinder students from developing their potential and taking advantage of available learning opportunities (Firman et al. 2019). Therefore, a learning medium was needed to help students learn vocabulary actively and enjoyably. The use of learning media can also facilitate the delivery of instructional content so that information can be more easily understood by students (Haptanti et al. 2024).

Based on the needs analysis, the researchers developed Magic Puzzle. At the design stage, the development process included determining the content, media form, puzzle-board dimensions, puzzle-piece design, picture cards, and a guidebook for using the medium. Magic Puzzle combines picture cards with letter puzzle pieces that must be arranged to form the corresponding vocabulary items. At the development stage, the design was realized as a tangible product. After the medium had been completed, validation was conducted by media, subject matter, and language experts to determine its feasibility before classroom use.

The implementation stage was carried out through a trial of the developed medium, followed by teacher and student response questionnaires. The implementation results showed positive responses from both the teacher and students, and the developed Magic Puzzle medium met the criteria for being highly practical. This was reflected in its ease of use, students' interest, and its perceived support for the vocabulary learning process. Based on the assessment results, Magic Puzzle met the feasibility and practicality criteria for use in learning activities. These findings are consistent with previous studies, who stated that the use of puzzle media in Indonesian language learning can help students understand learning material more deeply while also increasing learning motivation through an interactive and enjoyable approach (Kustiawan, 2024).

Learning activities that involve students in arranging letters through puzzles provide cognitive support consistent with the principle of learning through play (Inrafa et al. 2024). These activities help students recognize letter forms and word meanings, thereby making the learning process more meaningful. Through play-based learning activities, students not only develop vocabulary understanding but also demonstrate enthusiasm and motivation in participating in learning.

Conclusion

Magic Puzzle, as the product developed in this study, was designed as an alternative learning medium to support vocabulary mastery among second-grade elementary

school students. Based on the validators' assessments, the developed medium was categorized as highly feasible. The media expert provided a feasibility score of 92.5%, the subject matter expert 95%, and the language expert 92.5%, all of which were categorized as highly feasible. The average score from the three validation assessments was 93.33%. These results indicate that Magic Puzzle meets the highly feasible category for use in learning activities.

In terms of practicality, assessment data were obtained from teacher and student responses after the medium had been implemented in learning activities. The teacher response score was 92.5%, while the student response score was 92.6%. Both results were categorized as highly practical, with an average practicality score of 92.55%. These results indicate that Magic Puzzle is easy to use, provides engaging visual features and activities, and can encourage student participation to support an enjoyable learning environment. Nevertheless, this study has limitations because product assessment was restricted to feasibility and practicality. Future studies may develop Magic Puzzle with a broader range of vocabulary content and examine its effectiveness in improving students' learning outcomes.

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