Research Article

Development of Puzzle Learning Media based on Local Wisdom of Maluku Culture in Teaching Social Science Learning in 4ᵗʰ Grade Students of SD Negeri Leahari

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Abstract.
This study aims to design learning media in the form of puzzles based on the local wisdom of Maluku culture and test its feasibility. The research was done using R&D method by adapting the ADDIE model—namely Analysis, Design, Development, Implementation, and Evaluation. The results of the validator's assessment of the puzzle obtained an average percentage of 92.5% by media experts in the category "Very Feasible" to use in learning activities. The results of the response from the teacher obtained an average percentage of 97.2% with the category "Very Feasible to Use", while the responses from students showed the category "Very Feasible" to use with an average percentage of 91.5%. The box-shaped puzzle consists of pieces of arrangeable images that display the cultural diversity of Maluku and is made from natural materials, namely sago tree fronds or *'gaba-gaba'*. The cultural diversity material contained in this puzzle includes traditional houses, clothing, and dances from Maluku Province. The puzzle was designed using Canva and Adobe Illustration. In conclusion, puzzle learning media with Maluku's local wisdom-based is very feasible to use in learning to help teachers teach about "Cultural Diversity".

Keywords: Learning Media, Puzzle, Local Wisdom, Maluku Culture

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1. Introduction

Learning tools are needed in the learning process, and all teachers who provide material to students must make them. One learning tool that is believed to really help teachers is learning media. The media used in the learning process really helps students have the courage to express their opinions and can form good group collaboration [1].

The learning process certainly requires supporting media to facilitate and maximize learning to achieve the expected results. Media use in the learning process can explain the material, increase and direct students' attention to create learning motivation in students, the interaction between students and teachers, and increase students' interest

and curiosity towards the learning material. Since learning media is very important in increasing learning effectiveness, it is hoped that it can become a tool for teachers and stimulate teachers to develop other learning media that can be used in the learning process. Based on the results of observations made by researchers on 29 October – 2 December 2023 at SDN Leahari, media use in subtheme two about "The Beauty of My Country's Cultural Diversity" is limited and less varied. Learning only centers on teachers and theme books. The teacher only explains the material on cultural diversity with a lecture and shows several pictures of diversity from the theme book. In the theme book students use, only a few pictures of diversity are included, and the others are provided in written form. Moreover, the diverse material in the theme book is still national, lacking local cultural elements appropriate to the area where students live. One way that can be done is by

innovating the development of learning media that suits the needs and characteristics of students.

The presence of media is very important in learning to present material to students who can directly interact with the objects that are the study material [2]. Students need learning media that can increase their learning motivation, be directly involved in its use, and provide insight into the cultural diversity elements around them. Through interesting learning media with local cultural elements, students are aware of the cultural richness in their area. Therefore, there needs to be an alternative so that students become active and creative and easily understand each material they study. Given the problems above, researchers studied the development of puzzle learning media based on the local wisdom of Maluku culture and the theme "The Beauty of My Country's Cultural Diversity" in thematic learning.

Puzzles can make the class atmosphere lively and active until learning ends [3]. Students look enthusiastic and focused on what they must do in the puzzle game. Puzzles have properties that pique children's curiosity, and puzzles are also an effective medium for introducing or testing students' knowledge through pictures [4]. With this game, students will learn to analyze a problem by recognizing clues from existing image pieces, such as shape, texture, and color, and then correctly estimating their position. Puzzle Learning Media Based on Maluku Cultural Wisdom was chosen to maximize the learning process and direct students to the importance of culture, which is starting to disappear.

Puzzle learning media based on local Maluku wisdom can be used as an alternative learning media in schools to attract attention and increase motivation and learning outcomes. This puzzle displays an image of Maluku culture divided into arrangeable

image pieces to sharpen thinking power, train patience, and get used to sharing skills. Apart from that, it can also be called an educational game because it is not only for playing but also for sharpening the brain and training the speed of the mind and hands. This research was in line with previous research conducted by [5] in the Journal of Educational Research and Development entitled Development of Box Stacking Puzzle Media on an Ecosystem Theme, aimed at producing puzzle media on an ecosystem theme with development test results of "Very Suitable."

2. Method

The development model used in this research is the ADDIE development model. This model was selected because it has a systematically structured flow and steps that are very simple and easy to carry out. This research procedure adapts the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation [6].

According to [7], the stages of learning design development using the ADDIE approach are interrelated and sequential. They function as a systematic assessment of the design, development, and evaluation of learning programs, processes, and products, which must meet the validity, practicality, and effectiveness criteria. The data collection techniques used in this research are questionnaires and documentation. The research instrument was a validation questionnaire sheet given to media experts and material experts, a student response questionnaire sheet, and an educator response questionnaire sheet.

Two techniques are used in this research: This qualitative data analysis was obtained from interviews with 4th-grade teachers at SDN Leahari. Suggestions and input will be used to revise product designs. This data will later be summarized in descriptive results. Qualitative data analysis is also at the testing stage; data is collected using an open assessment questionnaire to provide criticism and suggestions or input for improving the media developed by media validator experts. The results of this descriptive analysis are used to determine the product's attractiveness resulting from the development of 4th-grade learning media at SDN Leahari. This qualitative data analysis is used to analyze the data collection results obtained from validator experts' evaluations through administering questionnaires. The data analysis technique in this development research is to describe all thoughts, suggestions, and responses obtained from the assessment sheet. Data is collected using a questionnaire during the trial stage to obtain criticism, suggestions, input, and improvements. This analysis is used to formulate the accuracy,

attractiveness, and effectiveness of puzzle learning media products using a Likert scale with criteria 1-4, then analyzed using the calculation of the average percentage score for each item from each question listed in the questionnaire.

The Likert scale criteria used in this research are as follows:

Poor 1

Fair 2

Good 3

Very Good 4

Meanwhile, to formulate the percentage results of the questionnaire assessment for each item using the calculation formula:

Calculation Formula: $P = \frac{R}{SM} \times 100$

Note

P : Precentage

R : Total Score

SM : Maximum score

TABLE 1: Feasibility Percentage.

Criteria	Criteria Interval
Very Suitable	76%-100%
Fairly Suitable	56%-75%
Less Suitable	40%-55%
Not Suitable	< 39%

3. Result

The results of research and development produced puzzle learning media based on the local wisdom of Maluku culture. This learning media has been tested and validated by validators, teachers, and students.

4. Analysis

The analysis stage involves identifying various fundamental problems. To this end, the researcher conducted a needs analysis by observing and interviewing the 4th-grade teacher at SDN Leahari. At this stage, the researcher started by collecting information.

First, the researcher looked for information related to the current curriculum, namely the 2013 Curriculum.
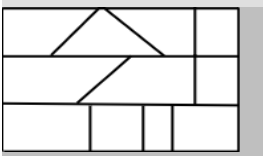
5. Development

After analyzing and gathering information, the next step is the design stage, which is the planning stage in developing puzzle learning media. The puzzle specifications were made before the revision using a PVC board. However, after the revision, sago tree fronds (gaba-gaba) with a thickness of 3 mm and a size of 21 x 14 cm were used.

a) Description of the prototype

The physical form of the puzzle is in the form of puzzle pieces that can be arranged into a display of Maluku's cultural diversity packaged in box-like packaging. The language used in Puzzle is Indonesian. The cultural diversity material in the puzzle includes traditional houses, clothing, and dances from Maluku province. The puzzle was designed using Canva and Adobe Illustration.

TABLE 2: Puzzle Design.

No	Design	Part
1		Front view of puzzle media
2		Arrangement view

6. Development

b) Creating Puzzle

The product developed in this research is puzzle media based on local wisdom. It is an educational game designed to stimulate students' learning abilities by using gaba- gaba as local wisdom that needs to be preserved and understood by students in Maluku. Doing this puzzle will symbolize for students the ability to study harder and form good cultural character.

c) Product design

Design for each part and the puzzle packaging using the Canva and Adobe Illustration applications. The following is the puzzle product design:

TABLE 3: Image of Puzzle Media Development Based on Local Wisdom of Maluku Culture.

Development of Puzzle Media Based on Local Wisdom of Maluku Culture		
Storage Box	Baileo Puzzle	Lenso Dance Puzzle
Traditional Clothing Puzzle	Instruction	Interesting Facts about B
Lenso Dance Properties		Cele Shirt Properties

6.1. Media experts tested the development of this learning media. The validation carried out by media experts is as follows:

1) Media experts validation

Media experts assessed by providing a questionnaire with columns for questions, comments/input, and suggestions. Based on the validation results, a score of 36 was obtained, with a maximum score of 40. The score was calculated using the following formula:

$$P = \frac{R}{SM} \times 100 \quad P = \frac{36}{40} \times 100 = 90\%$$

The results of material validation by media experts show that from 6 indicators with a maximum score of 40, the total score obtained based on the media expert's assessment is 36. The percentage obtained is 90% with the eligibility criteria "Very Suitable."

TABLE 4: Validation Results by Media Experts.

No	Rated Aspect	Score
1	This media can be used by students easily	3
2	This media can be done by students easily	3
3	This media can help students get to know the local culture	4
4	This media can help students learn about local culture	4
5	This media design can foster students' curiosity about learning	4
6	The form used in this media can attract students' enthusiasm for learning	3
7	The colours used in this media can attract students' enthusiasm for learning	3
8	This media can be used wherever and whenever the conditions are	4
9	This media is easy to use by students both individually and in groups	4
10	This media has relevant content	4
Total		36
Max Score		40
Percentage		90%
Feasibility Criteria		Very Suitable

Based on the results of media expert validation, a score of 36 was obtained, with a maximum score of 40. The score was calculated using the following formula:

$$P = \frac{R}{SM} \times 100 \quad P = \frac{36}{40} \times = 90\%$$

The results of content validation by media experts show that from 6 indicators with a maximum score of 40, the total score obtained based on the media expert's assessment was 36 or 90% with the criteria of "Very Suitable". Based on the results of the media experts' validation assessment of each puzzle component, this puzzle is very suitable for learning.
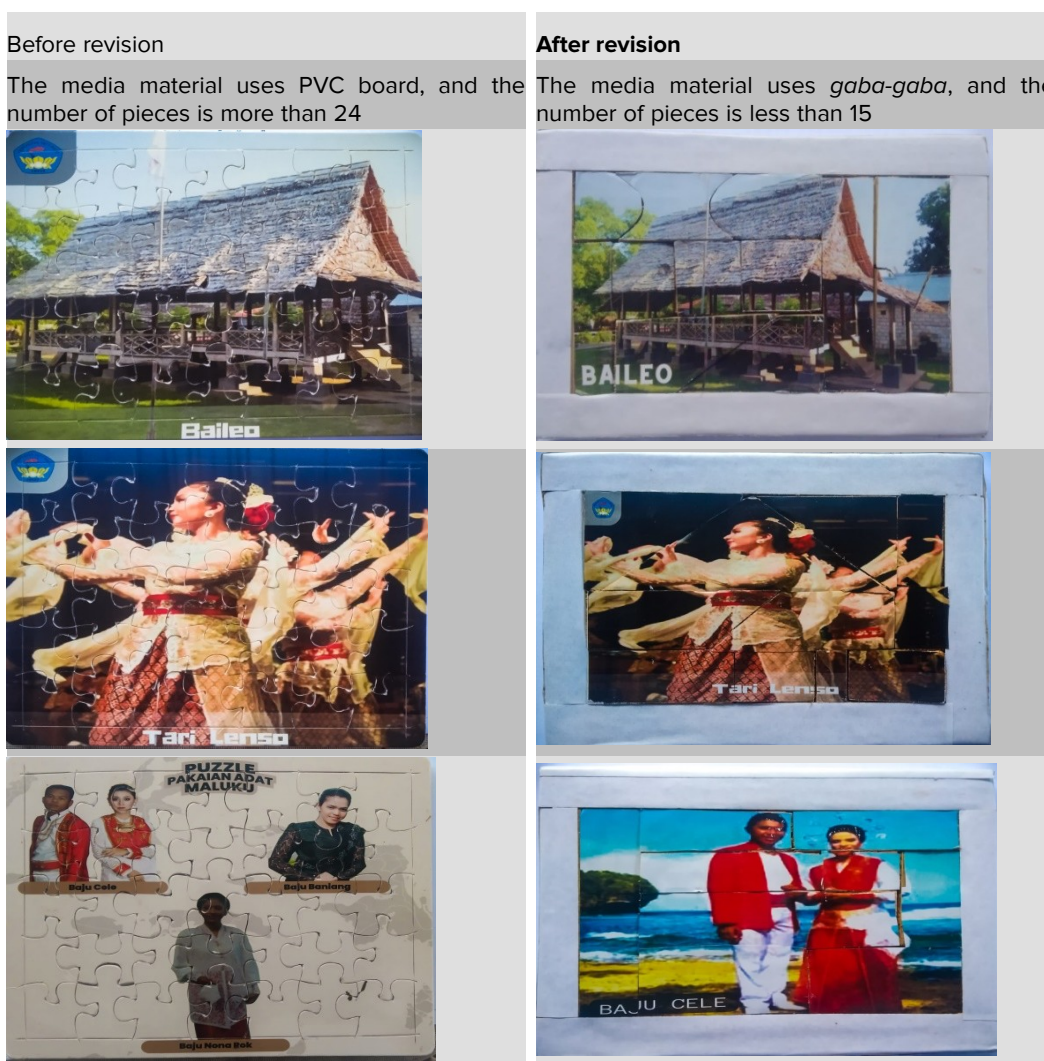
2) Revision

Media expert validators revised the puzzle to make it suitable for use in the learning process. The validator advised that puzzle materials must originate from Maluku.

TABLE 5: Correction and Revision Results.

Validator	Correction	Revision
Media Expert	Puzzle materials must use materials from Maluku, and there should not be too any pieces.	The puzzle material already uses *gaba-gaba* and less than 15 pieces.

The results of the revisions to suggestions and criticism from validators are as follows:

TABLE 6: Correction and Revision Results from Validators.

Before revision	After revision
The media material uses PVC board, and the number of pieces is more than 24	The media material uses *gaba-gaba*, and the number of pieces is less than 15

Based on criticism and suggestions from media experts, researchers made improvements according to the validator's suggestions. Input and suggestions from puzzle media development have been improved and added. After expert validation, researchers continued field testing in the 4th grade of SDN Leahari.

3) User Test

The user test on 4th-grade teachers was carried out and obtained 97.75% on user test results. If adjusted to the feasibility table, the developed product falls into the "Very Suitable" category, meaning this media is excellent for students. Then, in conclusion, this development product did not need to be revised.

TABLE 7: Assessment Result from Teachers at SDN Leahari.

No	Rated Aspects	Score	Max Score	Percentage	Criteria
1	Content Suitability	11	12	91%	Very Suitable
2	Readability	12	12	100%	Very Suitable
3	Kejelasan	8	8	100%	Very Suitable
4	Pemberian *feed back*	4	4	100%	Very Suitable
Total		35	36		
Average				97,75%	Very Suitable

Based on the table above, 4th-grade teachers at SDN Leahari have carried out the trials with the following results: Content Suitability at 91% or the "Very Suitable" category, Readability at 100% or the "Very Suitable" category, Clarity at 100% or the "Very Suitable" category. Provide feedback in the 100% or the "Very Suitable" category. From the fourth-grade teacher's assessment results, the average percentage was 97.75% or in the "Very Suitable" category. The results of this trial showed no criticisms or suggestions from the class teachers.

4) Small Group Trials

Small group trials were carried out to determine the assessments and responses of teachers and students to the products developed by researchers. Small group trials were carried out in the 4th grade of SDN Leahari to determine Attractiveness and Content as rated aspects. The following are the results of the assessment by SDN Leahari students:

TABLE 8: Assessment Results of Small Group Trial of 4th-grade Students at SDN Leahari.

No	Rated Aspects	Score	Max Score	Percentage	Criteria
1	Attractiveness	86	96	89.5 %	Very Suitable
2	Content	61	64	95 %	Very Suitable
Total		147	160		
Average				92 %	Very Suitable

Based on the table, four fourth-grade students obtained an assessment, which included the interest aspect, with a percentage of 89.5% in the very suitable for use category, and the material aspect, with a percentage of 95% in the "Very Suitable"

category. From the average assessment score, the products gain 92% or in the "Very Suitable" category.

5) Large Group Trials

This large group trial was carried out with a total of 25 students. This large group trial aims to determine students' responses and assessments regarding the media developed by researchers with more respondents. The results of student assessments in large groups are as follows:

TABLE 9: Assessment Results of Large Group Trial of 4th-grade Students at SDN Leahari.

No	Rated Aspects	Score	Max Score	Percentage	Criteria
1	Attractiveness	219	240	91 %	Very Suitable
2	Content	148	160	92 %	Very Suitable
Total		367	400		
Average				91.5 %	Very Suitable

Based on this table, an assessment was obtained from 25 fourth-grade students, including the Attractiveness aspect, with a percentage of 91% in the "Very Suitable" category, and the Content aspect, with a percentage of 92% in the "Very Suitable" category. From the average assessment score, the product obtained 91.5% or in the "Very Suitable" category.

7. Implementation

The quality, usefulness, and suitability of the product developed for 4th-grade students at SDN Leahari are assessed during product development and class trials so that products that have been declared valid are ready to be implemented in classroom learning.

8. Evaluation

The final product was produced starting from the analysis, planning stage, and development results, which included small-scale and large-scale trials and revisions to produce the final product in the form of puzzle learning media based on local Maluku cultural wisdom. This media has been validated and declared appropriate and very interesting to be applied in learning at the 4th-grade elementary school level. The disadvantage of this puzzle media is that it can only be applied to one material, so this puzzle media can only help students understand material about cultural diversity in Maluku.

9. Discussion

This development research produced the Puzzle Learning Media Based on the Local Wisdom of Maluku Culture to maximize students' abilities in the learning process. According to [8], using actual or concrete media at the basic education level is one of the practical learning activities that indirectly guides students in connecting the material with the students' real world (contextual learning). Maluku Cultural Puzzle is an educational game-based learning media in terms of its use. According to [9], games are essential for the mental development of students; even while studying, they must occasionally be interspersed with games so that students do not get bored and divert their attention. Therefore, students must be allowed and facilitated to play between studies [10].

This media development uses the ADDIE model because it is more rational, systematic, easy to learn, and complete. The development of this puzzle based on local Maluku cultural wisdom aims to produce educational media of the highest possible quality and assist educators in delivering material about "Cultural Diversity in My Country" and generate learning stimuli for students, especially for fourth-grade elementary school [11].

10. Conclusions and Recomendations

Based on the results and discussion of puzzle media development research, the following conclusions can be drawn that this research and development (R&D) product adapts the ADDIE development model. The results of the validator's assessment of the development of puzzle media obtained an average percentage of 92.5% by media experts in the "Very Suitable" category; in other words, the puzzle has qualities that are very suitable for use. The results showed that teacher respondents obtained an average percentage of 97.2% in the "Very Suitable" category. In comparison, student respondents obtained the category very suitable for use with an average percentage of 91.5%. Thus, the assessment of puzzle learning media has qualities that are very suitable for use in learning. Moreover, it can help teachers convey cultural diversity material to achieve learning objectives optimally.

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