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Development of Teaching Materials Based on the Parahu Baganduang Tradition to Facilitate Science and Science Learning Outcomes for Class IV Elementary School Students

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Abstract

The curriculum supports the learning process that utilizes local potential. Basically, there are teaching materials that are deliberately designed for learning and some are not specifically designed but can be used for learning. Students need alternative teaching materials that contain local wisdom, especially Tradition, so that their knowledge is broader. The method used in this study is by using research and development (Research and Development or R&D) with the ADDIE approach model. The results of the study showed that in the material aspect, it obtained a percentage score of 88% with a very valid category, in the language aspect it obtained a percentage score of 90% with a very valid category, and in the media aspect it obtained a percentage score of 91% with a very valid category. Therefore, the teaching materials developed are very practical and suitable for use in Elementary Schools as a learning medium, especially in the subject of Science in Chapter 2 of grade IV Elementary School, in the practicality trial it obtained a percentage score of 89% with a very practical category, limited trials obtained a percentage score of 83% with a very feasible category. The researcher also conducted a test of the validity of the questions where in the normality test the significance value obtained a value of 0.06 > 0.05 with a normally distributed category, in the homogeneity test it obtained a value of 0.07> 0.05 with a homogeneous category, and at the T-test stage, the T-count obtained a value of 1.764, which is a value of 1.764> 1.664 which can be interpreted that the T-count is greater than the T-table and can be categorized Ha can be accepted. Therefore, student satisfaction in the use of teaching materials based on the Baganduang boat tradition in science learning has an effect on facilitating the learning outcomes of grade IV elementary school students.

Keywords: Baganduang Boat Tradition, Teaching Materials, Science Learning Outcomes

1. Introduction

Learning is a process of absorbing information by students that involves learning components such as educators, students, teaching materials, materials and learning media in implementing the learning process Suryani & Agung, (in Hayati & Harianto, 2017) . Therefore, good learning outcomes are certainly expected by every student. According to Sudjana (in Nurrita, 2018), learning outcomes are competencies or skills that can be achieved by students after going through learning activities designed and implemented by teachers in a particular school and class.

Therefore, the learning process does not only involve educators and students, but the role of teaching materials is also very much needed (Safitri et al., 2021) . Teaching materials are all materials that are systematically arranged that display a complete figure of the competencies that will be mastered by students and are used in the learning process with the aim of planning and reviewing the implementation of learning, (Despi et al., 2022) . In line with that, teaching materials can be interpreted as material or subject matter that is arranged systematically, which is used by teachers and students in the learning process, Pannen (in Waraulia, 2020) .

Even though it has been arranged in such a way, teachers can still develop or enrich other materials and activities that are appropriate for their students and still in accordance with the learning objectives that have been set. Developing the teaching materials needed for learning is a professional responsibility for teachers, as well as interested parties.

Based on the results of interviews conducted at SD Negeri 008 Seberang Pantai with grade IV teachers, problems were found in learning. The problems encountered include, 1) students still do not understand the local wisdom in their environment, 2) Teaching materials and exercises used by teachers are only guided by teacher books and student books so that the learning process is monotonous, and has not been linked to local traditions so that student learning outcomes are low, especially in science subjects, 3) on the other hand teachers also have difficulty in designing interesting teaching materials.

Students need alternative teaching materials that contain local wisdom, especially traditions, so that their knowledge can expand. Alternative teaching

materials can be taken by utilizing the conditions surrounding the students' environment and instilling the values contained therein, which are used as additional teaching materials for students. It is hoped that introducing students to the richness of local wisdom in the form of traditions will increase their curiosity and a sense of preserving it.

Local Wisdom according to Law No. 32 of 2009 (Njatrijani, 2018) is the noble values that apply in the social order that aims to protect and manage the environment sustainably. Local wisdom found in several indigenous groups/communities in Indonesia contains many noble values of the nation's culture that are still strong as the identity of the character of its citizens (Priyatna, 2017).

The Riau region, especially in Kuantan Singingi Regency, has various local traditions, including balimau kasai , pacu Jalur, silat pangean, parahu baganduang , and sepak rago tinggi. These traditions are local wisdom or certain areas in Kuantan Singingi Regency. Therefore, the researcher took one of the diverse traditions in Kuantan Singingi Regency as teaching material, namely based on the Baganduang boat tradition .

Based on these problems, there is a need for interesting and easy-to-use teaching materials in order to foster interest in learning, make learning more meaningful, improve student understanding, and can be used by students independently. Therefore, the researcher is interested in conducting a study entitled: Development of Teaching Materials Based on the Baganduang Boat Tradition to Improve the Science Learning Outcomes of Grade IV Elementary School Students.

2. Research Methods

This study uses the research and development method (Research and Development or R&D) with the ADDIE research model. R&D is a research method used to produce certain products, as well as to test the effectiveness of the product (Sugiyono, 2013) . The ADDIE research model functions as a guideline in building effective, dynamic learning program tools and infrastructure, and can support the learning performance itself (Bilfaqih, 2009).

The five stages in the ADDIE research model are Analysis , Design , Development , Implementation , and Evaluation (Branch, 2009) .

The method and model used by the researcher aims to develop teaching materials based on the Baganduang boat tradition to test its validity, practicality, and effectiveness. Direct trials were conducted in elementary schools designated by the researcher. The stages of the ADDIE research model are illustrated in Figure 1.

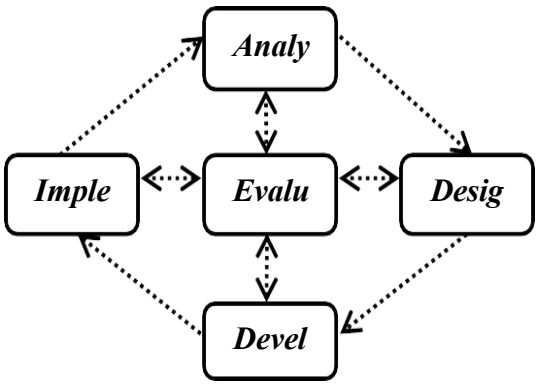

Figure 1. ADDIE Development Stages

Place and Time of Research

This research was conducted at SD Negeri 008 Seberang Pantai, Kuantan Mudik District, Kuantan Singingi Regency, Riau. This research is planned to be carried out in the odd semester of the 2023-2024 academic year.

Research Procedures

In this study, as explained, the researcher used the R&D method with the ADDIE model. The use of the ADDIE procedure is a guideline in building effective, dynamic learning program devices and infrastructure that support the learning performance itself.

At the stage of developing science and natural science learning media with teaching materials based on the Baganduang boat tradition, the development model proposed by (Branch, 2009) was used.

Analysis (Analysis Stage)

At the analysis stage , it is the stage of analyzing problems that occur in learning. This analysis stage aims for researchers to know the conditions in the field related to the learning process at SD Negeri 008 Seberang Pantai. At this stage, researchers analyze the competencies that must be achieved by students, analyze the materials that will be used, and analyze the appropriate learning materials for the competencies that must be achieved. The analysis stage includes several activities as follows:

a) Conducting an analysis of the competencies required of students;
b) Conducting an analysis of student characteristics regarding their learning capacity, knowledge, skills, attitudes that students already possess and other related aspects;
c) Conduct material analysis according to competency requirements.

After the analysis is carried out, an evaluation

needs to be carried out to determine whether the objectives in the analysis stage have been met or not, then a revision is carried out as an improvement to the initial analysis results and as a prerequisite for continuing to the next stage, namely the design stage.

Design (Planning Stage)

At this stage, the researcher designs what is needed when conducting research, such as how to use learning media, questionnaires, and materials used. At this stage, when designing learning, it is focused on three activities, namely the selection of materials according to student characteristics and competency demands, the learning strategies applied and the forms and methods of assessment and evaluation used (Puspitasari & Primasatya, 2017).

Development (Development Stage)

At this stage, researchers develop learning media to produce products. The development stage includes several activities, including: finding and collecting all sources that will be needed in research such as material development, making charts and tables.

At this stage, there is a process related to all the things that are needed must be truly prepared because validation will be carried out (Puspitasari & Primasatya, 2017) . In this development stage, researchers prepare learning media for teaching materials. based on the tradition of the Baganduang boat which contains IPAS material in the development process taken from various references such as books and the internet related to the material. The resulting learning media products will be validated by material experts, media experts, and class teachers. This is done to determine the level of feasibility of the media produced.

Validation Test of Questionnaire Instrument

Validation testing of the questionnaire instrument was carried out using a questionnaire sheet. The questionnaire instrument that has been created is first validated to see the validity of the questionnaire by a validator/expert (Expert Judgment).

Validity Test of Teaching Materials Based on the Baganduang Boat Tradition

The product validation assessment instrument for teaching materials based on the Baganduang boat tradition refers to BNSP standards. The grid in the validation sheet by the validator can be seen in table 1.

Table 1. Validation Sheet Grid

No	Assessment Aspects	Indicator	Item No.
1	Content aspects	Teaching materials are made in accordance with basic competencies	1
		Questions in teaching materials based on the *Baganduang boat tradition* are in accordance with the indicators that you want to achieve.	2
		The material in the teaching materials is in accordance with the learning objectives	3
		The material presented in the teaching materials is actual	4
		Activities in teaching materials based on the *Baganduang boat tradition* support students' understanding of the concept of science and natural sciences.	5
		The development of teaching materials based on the *Baganduang boat tradition* attracts the interest of students	6
		Development of teaching materials based on the *Baganduang boat tradition* improves student learning outcomes	7
2	Linguistic aspects	Using language that complies with EYD	8
		The terms used in the media are easy to understand	9
		Clarity of use of words and language	10
		Ease of understanding sentences	11
3	Presentation aspects	Presentation of teaching materials based on the *Baganduang boat tradition* in a systematic and logical manner	12
		The complexity of presenting the concept of teaching materials based on the *Baganduang boat tradition*	13
		The images in the teaching materials based on the *Baganduang boat tradition* are easy to understand.	14
		Baganduang boat tradition	15
4	Graphic Aspects	Have an identity	16
		Cover of teaching materials based on *the Parahu Baganduang tradition*	17
		Has step-by-step instructions for completing teaching materials	18
		The writing uses clear letters	19
		Accuracy of image proportions in text	20
		The teaching materials based on the *Baganduang boat tradition* have a systematic layout.	21

	Clarity of images of teaching materials based on the *Baganduang boat tradition*	22
	Readability of writing in sentences	23
	learning outcomes integrated into teaching materials according to the material	24
	Background harmony	25

Testing is carried out using a validation sheet. Teaching materials that have been developed are first validated to see the validity of the development results by validators/experts (Expert Judgment). After validation, if the validation results show that the teaching materials based on the Baganduang boat tradition to improve student learning outcomes are valid according to the established validity criteria, then the media will then go to the practicality test stage to determine the usability of the teaching materials based on the Baganduang boat tradition and testing of student learning outcomes.

Practicality Test of Teaching Materials Based on the Baganduang Boat Tradition

The practicality test was conducted on 2 respondents. The practicality test was conducted using a practicality questionnaire consisting of 4 assessment indicators. This test was conducted to determine the practicality of teaching materials based on the Baganduang boat tradition. The practicality test grid can be seen in Table 2.

Table 2. Practicality Validation Sheet Grid

No.	Assessment Aspects	Number of Instruments
1	Display and language	8
2	Attraction	5
3	Use	6
4	Time	1
Amount		20

Source: National Education Standards Agency (2014) with modifications

Limited Trial of Teaching Materials

The student response test was conducted using a student questionnaire. The student response was conducted at SD Negeri 008 Seberang Pantai on 6 students for the one-to-one stage and 20 participants in the small group stage which aimed to find out how students responded to the teaching materials based on the Baganduang boat tradition that had been developed. The grid for the limited trial of the teaching materials can be seen in Table 3.

Table 3. Limited Trial Validation Sheet Grid

No.	Assessment Aspects	Number of Instruments
1	Appearance	7
2	Presentation of Material	6
3	Benefit	7
Amount		20

Source: National Education Standards Agency (2014) with modifications

Validation Test of Learning Outcome Questionnaire Instrument

The learning outcome questionnaire instrument test was conducted on 40 students. The learning outcome questionnaire was validated using SPSS to see the validity of each question. The questionnaire will be selected to obtain statements to be used, the learning outcome questionnaire consists of 6 indicators as aspects to be used by students. The learning interest questionnaire grid is in Table 4.

Table 4. Learning outcome questionnaire grid

No	Indicator	Number of Items
1	Enthusiastic in search of answers	3
2	Attention (focus) on the object being observed	4
3	Enthusiastic about the learning process	4
4	Pay attention to each step of the activities that have been set to find the concept.	3
5	Ask teachers and friends about the lesson material	4
6	Asking about anything that is being talked about or that arouses curiosity.	2
	Total	20

Testing of Question Instruments

The test of the question instrument is carried out on questions that have been developed for each competency developed. The questions will be validated by question experts and will be tested for validation, reliability, level of difficulty and discrimination of questions against students. The indicator grid for learning outcome test questions is in Table 5.

Table 5. Learning Outcome Test Question Indicator Grid

No	Learning Outcome Aspects	Indicator
1	*the Baganduang boat* tradition	Students can learn *the history of the Baganduang boat*
2	Parts of *a baganduang boat*	Students can mention what parts there are on *a baganduang boat.*
3	*Baganduang boat* tradition	Students can find out when the *Baganduang boat tradition* is held and students can give reasons why it needs to be carried out.
4	Characters in the *Baganduang boat tradition*	Students are able to mention what characters appear in the *Baganduang boat tradition.*

Implementation (Implementation Stage)

After the teaching materials based on the Baganduang boat tradition , it is declared valid and feasible, so the teaching materials based on the tradition of the baganduang boat is implemented in activity learning in school. Test try This done by students using teaching materials based on the tradition of the baganduang boat for studying the IPAS material. Then continued by filling out the questionnaire which done by student Which has use teaching materials based on the Baganduang boat tradition . Matter This The aim is to obtain some data to assess aspects of the suitability of teaching materials based on the tradition of the baganduang boat and evaluation as reference revision so that teaching materials based on the tradition of the baganduang boat better.

***Evaluation* (Evaluation Stage)**

Based on the implementation stages, teaching materials *based on the baganduang boat* tradition needs to be evaluated. Evaluation was obtained from teacher and student questionnaires and field notes. At the evaluation stage, final revisions are made to the product developed based on input or responses from teachers and students given during the implementation stage because there may still be deficiencies in the teaching materials. based on the tradition of the *baganduang boat* . The research design used was a control class and an experimental class *(quasiexperiment)* . This design has a control group, but cannot fully function to control external variables that affect the implementation of the experiment (Hasanah et al., 2018) . The research design can be seen in Table 6.

Table 6. Research Design *Nonequivalent control group design*

Class	Pretest	Treatment	Posttest
Experiment	O_1	X	O_2
Control	O_3	-	O_4

Information:
O1 = mean pretest of experimental group
O2 = mean posttest of experimental group
O3 = mean pretest control group
O4 = mean posttest of control group
X = science learning using teaching materials based on the

Baganduang boat tradition
According to (Hasanah et al., 2018) the research steps using this design are as follows:

1. Determining a sample from a population.
2. Determine the control group and experimental group randomly.
3. Give a pretest to both groups to determine students' initial abilities.
4. Controlling conditions so that both groups are the same , except for the treatment in the experimental group.
5. Give a posttest to both groups to determine the final abilities of the students.
6. Conduct data analysis to determine students' final abilities.

Data Analysis Techniques

Product Development Data Analysis

In the stage of developing teaching materials, data analysis is divided into several stages, namely:

1. Validity Test

Validity is a measure that shows the validity of an instrument. Validation testing refers to the extent to which an instrument performs a function. An instrument is said to be valid if the instrument can be used to measure what is to be measured (Sugiyono, 2019) . The feasibility test questionnaire can be obtained through a validation test from an expert validator's assessment to determine the level of feasibility of the product, whether it is feasible or not. Validity testing is carried out using Aiken's Validity theory (Aiken's V) . Aiken formulated the Aiken Validation formula to calculate the content-validity coefficient based on the results of a panel of experts research of n people on an item in terms of the extent to which the item can represent the measured construct. The Aiken formula used to assess the validity of the instrument is as follows.

$$V = \frac{\Sigma s}{[n(c-1)]}$$

Information :
V = instrument validity
s = r – you
r = number which are given by assessor
you = number evaluation validity of the lowest
n = amount assessor
c = number evaluation validity of the highest (Retnawati, 2016)

Validity value moment data collection determine the level validity questionnaire the. Category coefficient correlation test questionnaire validity can seen on Table 7 below This.

Table 7. Expert Validation Categorization Criteria

The size mark r	Interpretation
0.00 – 0.11	No Worthy Used
0.12 – 0.20	Worthy Used with Certain considerations
0.21 – 0.35	Worthy Used
0.36 – 1.00	Very Worthy Used

2. Practicality Test

Data collection was conducted using a practicality questionnaire on the developed teaching materials. The questionnaire contains 4 assessment indicators with a total of 20 statements as aspects to be assessed by respondents. Practicality analysis uses a Likert scale with the following steps:

1) Give a score for each answer item: strongly agree (4), agree (3), less agree (2), and disagree (1).
2) Add up each practitioner's score for each indicator.
3) The practicality value is given by using the formula below, while the practicality category can be seen in Table 8.

$$P = \frac{f}{N} x\ 100\%$$

Information:
P = Final value
f = score acquisition
N = Maximum Score

Table 8. Practicality Criteria

No	Mark (%)	Criteria
1	80 – 100	Very Practical
2	60 – 80	Practical
3	40 – 60	Quite practical
4	20 – 40	Less practical
5	0 – 20	Not practical

Source: Riduwan and Sunarto (2017)

3. Limited Trial

Limited trials were conducted using a prepared student response questionnaire. The limited trial questionnaire contained 20 statements as aspects to be assessed by respondents. The type of scale used was a Likert scale with a score of 1-4 as in Table 9 below.

Table 9. Categories of Response Assessment in the Questionnaire

Information	Alternative answers	Score
Strongly agree	SS	4
Agree	S	3
I disagree	KS	2
Don't agree	TS	1

Source: Sukardi (2014)

The results of the limited trial questionnaire will be analyzed according to the assessment guidelines that have been developed. The questionnaire response data will be analyzed descriptively with the following stages (Arikunto, 2014).

1. Add up the check marks (scores) in each column to find the percentage for each category.
2. Add up the check marks (scores) on the score for each column in the tool matrix, then compare the total with the total of all material descriptions and then find the percentage.
3. Write the percentage in each column.

Analysis of Question Validity Test

In addition to teaching materials, analysis was also carried out on online question instruments, which consisted of several testing stages, namely:

1. Normality Test

The normality test is a test that is carried out as a prerequisite for conducting data analysis. Normality test is conducted before the data is processed based on the proposed research models. The data normality test aims to detect the distribution of data in one variable that will be used in the study. Good and proper data to prove the research models is normal distribution data. The normality test used is the Kolmogorov-Smirnov test. The Kolmogorov-Smirnov formula is as follows:

$$KD = 1{,}36\ \frac{\sqrt{n_1 + n_2}}{n_1 + n_2}$$

Information:
KD = the Kolmogorov-Smirnov sum sought
n1 = number of samples obtained
n2 = expected number of samples (Sugiyono, 2013:257)

Data is said to be normal if the significant value is greater than 0.05 at (P>0.05). Conversely, if the significant value is smaller than 0.05 at (P<0.05) then the data is said to be abnormal.

2. Homogeneity Test

The homogeneity test is used to show that two or more groups of sample data come from populations that have the same variation . The homogeneity test is applied to post-test data from the experimental group and the control group. To measure the

homogeneity of variance from two groups of data, the F test formula is used as follows:

$$F = \frac{varian\ terbesar}{varian\ terkecil}$$ (Sugiyono, 2013: 276)

The significance level used is α = 0.05. The homogeneity test uses SPSS with the criteria used to draw conclusions if the calculated F is greater than the F table then it has a homogeneous variant. However, if the calculated F is greater than the table F, then the variance is not homogeneous.

3. T-Test

According to Sugiyono (2018; 223) t-test is a temporary answer to the formulation of the problem, namely asking about the relationship between two or more variables. The pretest and posttest data will be tested using a t-test with the help of Statistics software. The paired t-test is one of the hypothesis testing methods where the data used is not free (paired). The most common characteristic found in paired cases is that one individual (research object) receives 2 different treatments. Even though using the same individual , researchers still obtain 2 types of sample data, namely data from the first treatment and data from the second treatment.

$$t = \frac{\Sigma D}{\sqrt{\frac{n(\Sigma xD^2) - (\Sigma D)^2}{n-1}}}$$

Information:

t = significant value (t count) which will later be compared with the t table
N = number of samples
D = difference between group 1 and group 2 values

3. Results and Discussions

Results

In this chapter , the researcher will discuss the results of the research on the development of teaching materials based on the Baganduang boat tradition for grade IV in Elementary Schools. This teaching material was developed using the ADDIE model, which consists of five stages, namely: Analyze , Design , Development , Implementation , and Evaluation . The implementation of the research on the development of teaching materials based on the Baganduang boat tradition was carried out from April to June. The following is a description of the research implementation activities, namely:

1. Analyze (analysis)

analysis stage is the initial stage carried out by researchers with the aim of determining the material and getting an overview of the learning media needed by students. There are three stages of analysis carried out by researchers, namely curriculum analysis, student analysis, and material analysis .

2. Design

After conducting an evaluation at the analysis stage, the next stage is the design stage. In this design stage, the researcher first collects from various sources about the baganduang boat tradition which will be used as a reference for making teaching materials. Furthermore, the researcher carries out the design stage which begins with the following:

1. Creating a teaching material design
   teaching materials to be developed consist of the front page (cover) , foreword, table of contents, TP and IKTP mapping, material content, teaching modules and LKDP.
2. Layout
   The first process is layout, which creates a template for the teaching material page that will be implemented.

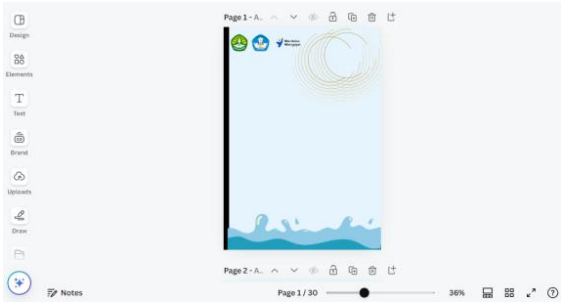

Figure 2. Layout

3. Background
   The next step is to add a background to give a detailed effect.

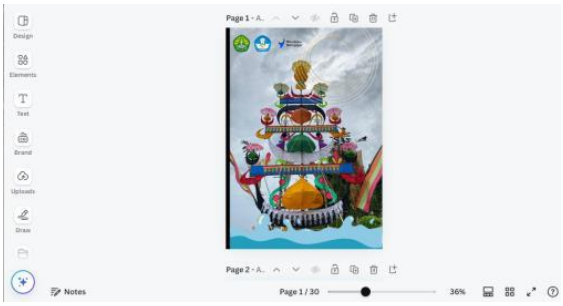

Figure 3. Background

4. Text

Add text to the finished image. So that readers know the teaching materials used.

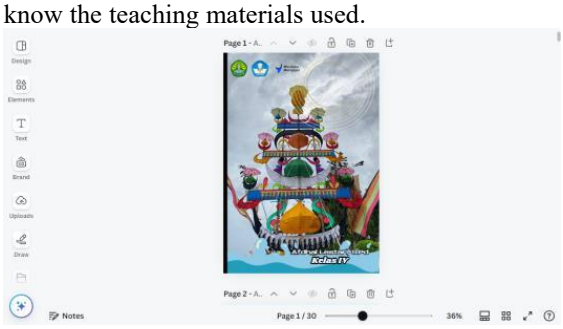

Figure 3. Text

5. Page number

After all the images and content of the material have been created, the next step is to provide a page number for each sheet of teaching material. So that readers know the page of the teaching material and make it easier for readers when reading the teaching material.

Figure 4. Pagenumber

6. Finishing

The next process is to unite each page that has been given a page number previously so that it becomes a single unit of teaching material that can be understood.

Figure 5. Finishing

3. Development

a. Product validation

After the design stage is completed, the product validation stage is carried out. Product validation is carried out by 3 validators: material expert validator, language expert validator, media expert validator. In a process of developing teaching materials, several revisions are carried out in accordance with the suggestions and input from the validator regarding the teaching materials. After the teaching materials are revised according to the suggestions and input, the validator will then assess the teaching materials.

Table 10. List of Names of Validators of Teaching Material Products

No	Validator Name	As
1	HM	Subject Matter Expert
2	HM	Linguist
3	HM	Media Expert

Table 11. Average Validation Score for Each Aspect in Teaching Materials

Assessment Aspects	Average Percentage of Each Aspect	Validation Category
Material	88%	Very Valid
Language	90%	Very Valid
Media	91%	Very Valid
Average	**90%**	**Very Valid**

b. Product Trial

In this product trial, the printed teaching materials were then tested, which was conducted in grade IV of elementary school. At the product trial stage, 2 trial stages were used, namely practicality trials and limited trials. The researcher did not only conduct one-on-one trials and limited trials on grade IV students of SDAS, the researcher also provided a questionnaire to the grade IV teachers regarding the teaching material media that had been developed.

a) Practicality Test

Table 12. Practicality Test Results

No	Assessment Aspects	Assessment Score	Average Score	Criteria
1	Display and Language	91%	89%	Very Practical
2	Attraction	88%		
3	Use	87%		
4	Time	90%		

b) Limited Trial

Table 13. Limited Trial Results

No	Assessment Aspects	Assessment Score	Average Score	Criteria
1	Appearance	85%	83%	Very Worth It
2	Presentation of material	82%		
3	Benefit	82%		

c. Analysis of Question Validity Test

a) Normality Test

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			40
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		9.73363189
Most Extreme Differences	Absolute		.203
	Positive		.152
	Negative		-.203
Test Statistic			.203
Asymp. Sig. (2-tailed)			.000[c]
Monte Carlo Sig. (2-tailed)	Sig.		.066[d]
	99% Confidence Interval	Lower Bound	.059
		Upper Bound	.072

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Based on 10000 sampled tables with starting seed 926214481.

Figure 6. Normality Test

In Figure 6. the validity test of the questions conducted by the researcher, the significance value that the researcher has tested on SPSS 22 against the normality test obtained a sig value of 0.06. It can be interpreted that the value of 0.06 > 0.05 is greater than 0.05 and is stated that the questions are normally distributed.

b) Homogeneity Test
Test of Homogeneity of Variances Student Learning Outcomes

Levene Statistics	df1	df2	Sig.
8,043	1	38	,007

Figure 7. Homogeneity Test

In Figure 7, the validity test of the questions conducted by the researcher, the significance value that the researcher has tested on SPSS 22 against the homogeneity test obtained a sig value of 0.07 . It can be interpreted that the value of 0.07 > 0.05 is greater than 0.05 and is stated that the questions are homogeneously distributed.

c). T-Test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Belajar Siswa	Equal variances assumed	8.043	.007	1.764	38	.086	5.500	3.118	-.813	11.813
	Equal variances not assumed			1.764	24.741	.090	5.500	3.118	-.926	11.926

Figure 8. T-Test

In Figure 3.8, the researcher's test of the validity of the questions is the calculated T-value that the researcher tested on SPSS 22 against the t-test. The T-count obtained a value of 1.764, where the value of 1.764>1.664 can be interpreted that the T-count is greater than the Ttable and can be categorized as acceptable Ha.

4. *Implementation*

At this implementation stage, the teaching materials that have been declared valid and feasible, then the teaching materials based on the *Baganduang boat tradition* are implemented in learning activities in Elementary Schools. This trial is carried out by students using the teaching materials based on the *Baganduang boat tradition* in studying the IPAS material. Then it is carried out by filling out a questionnaire carried out by students who have used the teaching materials based on the *Baganduang boat tradition* .

Table 14. Results After Using Teaching Materials

Aspect	Average Score	Criteria
Teaching Materials Based on *Baganduang Boat Tradition*	83%	Very Worth It

Based on table 3.4 , after the teaching materials based on the *Baganduang boat tradition* were implemented in learning activities, especially in the science and science subjects , and continued with filling out the questionnaire, a score of 83% was obtained with very feasible criteria.

The researcher also used the experimental class and control class to find out the students' understanding of the teaching materials based on the *Baganduang boat* tradition that the researcher had developed. The following are the results of the experimental class and control class that have been obtained.

One-Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			80
Normal Parameters[a,b]	Mean		.0000000
	Std. Deviation		1.12181826
Most Extreme Differences	Absolute		.158
	Positive		.158
	Negative		-.139
Test Statistic			.158
Asymp. Sig. (2-tailed)			.000[c]
Monte Carlo Sig. (2-tailed)	Sig.		.031[d]
	99% Confidence Interval	Lower Bound	.027
		Upper Bound	.036

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Based on 10000 sampled tables with starting seed 2000000.

Figure 9. Results of Experimental Class and Control Class

5. *Evaluation*

The next stage is evaluation, evaluation is the last stage in the development of teaching materials. The evaluation stage is a process where it can be seen whether the media created is in accordance with the initial expectations or not. The purpose of the evaluation is to be able to assess the quality of the teaching materials that have been developed. The evaluation was carried out by providing an

instrument in the form of a student response questionnaire.

Table 15. Recapitulation of Assessment Results from all Stages

No	Assessment Stages	Percentage	Category
1	Media Expert Validation	91%	Very Valid
2	Subject Matter Expert Validation	88%	Very Valid
3	Linguist Validation	90%	Very Valid
4	Practicality Trial	89%	Very Practical
5	Limited Trial	83%	Very Worth It
6	Normality Test	0.06>0.05	Normal
7	Homogeneity Test	0.07>0.05	Homogeneous
8	T-Test	1.764>1.664	Ha Accepted

From table 15, the results of the assessment above state that the teaching materials that have been developed are valid and suitable for use as learning media for elementary school students.

Discussion

Teaching materials are a set or learning tool that contains learning materials, learning methods, methods, limitations, and evaluation methods that are designed systematically and attractively in order to achieve the expected goals, namely achieving competencies or sub-competencies with all their complexities, Lestari (Magdalena, et al., 2020).

In line with this, Pannen & Purwanto (Hutama, 2016) explained that teaching materials that are designed and developed based on good instructional principles will be able to help students in their learning process, help teachers to reduce the time spent presenting material and increase the time spent by teachers to provide guidance to students.

The teaching materials developed are teaching materials in the form of modules. (Hutama, 2016) in his research developed teaching materials for modules based on Using cultural values for elementary school students. Meanwhile, researchers are also developing teaching materials in the form of modules but based on the Baganduang Boat tradition for grade IV Elementary School students.

According to Prastowo (2011), a module is a teaching material written with the aim of enabling students to learn independently with or without teacher guidance, therefore the module must contain learning instructions, competencies to be achieved, content of the lesson material, supporting information, practice questions, work instructions, evaluation and feedback on evaluation results.

Meilana & Aslam (2022) in their research, namely developing thematic teaching materials based on local wisdom in Elementary Schools, it can be seen in the analysis stage that they only conducted an initial survey in elementary schools and determined the material to be provided without conducting a curriculum analysis. Meanwhile, researchers conducted an initial survey stage at schools, looked at the characteristics of students and also conducted a curriculum analysis.

Law No. 20 of 2003 concerning the National Education System, Article 1 paragraph (19) (in Fauzan, 2017) which reads: curriculum is a set of plans and arrangements regarding objectives, content and learning materials and methods used as guidelines for organizing learning activities to achieve certain educational goals. Therefore, it can be concluded that the curriculum is very important to pay attention to in every arrangement of teaching materials that are to be developed with the hope of achieving learning obtained by each student based on the competencies that have been set.

Every teaching material that has been created must be able to improve the learning process and make students' attraction in the learning process. Teachers as educators must be able to make teaching materials as interesting as possible and also be able to apply them in learning both in the process and content.

The researcher developed teaching materials based on the Baganduang Boat Tradition based on local wisdom, previously the researcher had collected information about the Baganduang boat tradition. After that, the researcher conducted an initial survey to the school to understand the characteristics of the students and also to analyze the curriculum used by the school and determine what materials and classes the research would be conducted.

The research conducted by Adhaningrum, et al. in 2021, namely developing social studies teaching

materials with the theme of entrepreneurship for elementary schools. In his research, he used the Define, Design, Develop, and Disseminate (4D) model from Thiagarajan. Meanwhile, the researcher himself used the ADDIE model with the hope that every process and content carried out would produce good results for students.

This study aims to develop learning media in the form of modules for elementary school students. The development of this teaching material media is carried out using the Research and Development (RnD) method , with the ADDIE model consisting of 5stages, namely: Analyze, Design, Development , Implementation, and Evaluation .

The first stage carried out in the ADDIE model is analysis. Yes, this analysis is useful for identifying needs in the learning process and also for collecting various information regarding the needs of a product being developed. The analysis stage consists of two stages, namely curriculum analysis and student characteristics analysis. This curriculum analysis is carried out to ensure that the product to be developed by the researcher is in accordance with the needs of the students. In the implementation of learning used in the independent curriculum, it is carried out comprehensively in one chapter. The results of the analysis show that in grade IV of Elementary School there are 4 chapters . The researcher developed teaching materials based on the Baganduang boat tradition in chapter 2 of grade IV of Elementary School for the subject of Science. Student analysis is carried out by observing the characteristics of students because the teaching materials to be developed must be in accordance with the target users, namely grade IV Elementary School students. The purpose of student analysis is to determine the characteristics of students which include the learning style of students, age, pictures or illustrations that students like and colors that students like. Therefore, with this teaching material, it is hoped that students will enjoy learning and can increase students' interest in gaining information contained in the teaching material.

The next stage is the design stage, at this stage of teaching material design is done by making a design of teaching materials. At this design stage the researcher makes a design of teaching materials, layout, background, cover, and additional things needed in making teaching materials. After that, the teaching materials are colored so that the teaching materials are more interesting to read and then the teaching materials are numbered.

At the development stage, researchers conducted a product validation process. Product validation was conducted by material experts, language experts, and media experts. Based on the results of the product validation test conducted by material experts, the score was 88% with a very valid category, the results of the language validation test conducted by language experts obtained a score of 90% with a very valid category, and the results of the media validation test conducted by media experts obtained a score of 91% with a very valid category. Therefore, the media that has been developed and validated can be used as a learning medium in Elementary Schools. After the validation process, the next stage is the product trial. This product trial was conducted in grade IV of Elementary School. In this product trial, the researcher conducted a practicality trial and a limited trial. The practicality trial was tested on two students, so the results of the practicality trial were obtained with a percentage of 89% with a very practical category, and the results of the trial obtained a score with a percentage of 83% with a very feasible category. Therefore, the teaching materials developed are very practical and feasible to be used in Elementary Schools as a learning medium.

The researcher also conducted a test of the validity of the questions where in the normality test the significance value obtained a value of 0.06 > 0.05 with a normally distributed category, in the homogeneity test it obtained a value of 0.07> 0.05 with a homogeneous category, and at the T-test stage, T-count obtained a value of 1,764, where the value of 1,764> 1,664 can be interpreted that T-count is greater than T-table and can be categorized Ha can be accepted.

The next stage is the implementation stage , where at this stage the researcher gives a questionnaire to students after the researcher provides teaching materials based on the Baganduang boat tradition with the aim of obtaining a value for the feasibility of teaching materials based on the Baganduang boat tradition . The results of the questionnaire that the researcher has distributed obtained a percentage score of 83% with a very feasible category. This was also done by previous researchers by (Fiteriani, et al., 2021) The results of the trial of the learning media product obtained a satisfaction percentage of 91%.

Based on the results of the assessment, it can be concluded that the poster learning media is very feasible to be used as a science learning media in elementary schools and MI. This has a positive impact on students after using the teaching materials that have been developed. The final stage is the evaluation stage, at this evaluation stage there is an assessment stage which is found in media validation and also product trials. At this evaluation stage, the results obtained and the suitability of the

teaching materials are also compared. teaching materials as learning media can help teachers in delivering materials during the learning process, and teaching materials can also help students to learn independently. Therefore, according to Adib Wahyudi (2022), the success of learning can be determined by the use of teaching materials made by teachers, such as those covering knowledge, insight, understanding and how creative they are in making teaching materials more innovative, creative and fun.

4. Conclusion

Based on the results of research and discussion conducted in the development of teaching materials media for science learning for grade IV Elementary Schools, it can be concluded that:

1. In this study there are three aspects of assessment of the teaching materials that have been developed, namely the material aspect, the language aspect, the media aspect. In the material aspect, it obtained a percentage score of 88% with a very valid category, in the language aspect it obtained a percentage score of 90% with a very valid category, and in the media aspect it obtained a percentage score of 91% with a very valid category. Therefore , the teaching materials developed are very practical and suitable for use in Elementary Schools as a learning medium, especially in the subject of Science in Chapter 2 of grade IV Elementary School.
2. Based on the results of the trials conducted by the researcher, in the practicality trial obtained a percentage score of 89% with a very practical category, the limited trial obtained a percentage score of 83% with a very feasible category. The researcher also conducted a test of the validity of the questions in which the normality test of the significance value obtained a value of 0.06 > 0.05 with a normally distributed category, in the homogeneity test obtained a value of 0.07> 0.05 with a homogeneous category, and at the T-test stage, T-count obtained a value of 1,764, which is a value of 1,764> 1,664 which can be interpreted that 16 T-count is greater than T-table and can be categorized Ha can be accepted. Therefore, student satisfaction in the use of teaching materials based on the Baganduang boat tradition in science learning has an effect on facilitating the learning outcomes of grade IV elementary school students.

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