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FLAT-BUILT LEARNING DESIGN USING ORIGAMI TO FACILITATE PANCASILA STUDENT PROFILE CRITICAL REASONING DIMENSIONS FOR CLASS IV PRIMARY SCHOOL

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ABSTRACT

The background that drives this research is that there has been no effort by teachers to create learning designs that encourage students to be active in learning activities by using different media on flat material which is able to improve students' critical reasoning abilities. The aim of this research is to develop, analyze the feasibility, and the effectiveness of Planar Building Learning Design Using Origami to Facilitate the Profile of Pancasila Students with Critical Reasoning Dimensions for Class IV. The research method used is research and development (R & D) with the ADDIE (Analyze, Design, Develop, Implementation, Evaluation) development model. The subjects of this research were Class IV elementary school students. The results of the research on Flat Building Learning Designs Using Origami were packaged into a book, the quality of the learning design was assessed using feasibility tests and product effectiveness tests, product feasibility tests based on expert testing, this testing used questionnaires in the form of material expert questionnaires, and media expert questionnaires, effectiveness tests The product is based on the results of pretest and posttest scores using the t test and n gain score test, from the results of the implementation there are still students who are not able to understand the flat shape material well, then students have difficulty understanding the characteristics of flat shapes, in using origami media some students also have able to develop their reasoning to create different designs or folding methods, students are more active in learning activities if they use learning media. It can be concluded that learning will be systematic and enjoyable if it is designed using learning media that is appropriate to the material

Keywords: Learning Design, research and development, Critical Reasoning,

INTRODUCTION

Education is a process of changing a person from not knowing to knowing, from not understanding to understanding. Education is considered very important for a person to have because with education a nation will be considered to be of good quality (Br, Sinaga et al, 2021). Everyone certainly needs education in their life, because education is considered an effort or a way for someone to be able to develop the ability to think both creatively and critically through a learning process. One of the subjects that is considered important at elementary school level is Mathematics. The key to success in science in education is the door to a brilliant career in the future to be ready to compete and compete (Nursyamsiah et al., 2020).

Mathematics is a learning science that we often encounter in everyday life, starting from measuring, calculating, reading to getting to know flat shapes. build space, create tables and graphs. Therefore mathematics has an important role in human life. Apart from that, mathematics lessons have also been implemented since elementary school (SD), this aims to train students' logical, critical, creative and consistent thinking skills. One branch of mathematics that has a special place in the curriculum in Indonesia is geometry. Geometry is a part of mathematics that is very close to students, because almost all visual objects around students are geometric objects (Safrina, Ikhsan, and Ahmad; 2014). Apart from that, geometry material has been introduced since children started elementary to high level education. The geometry material taught at the basic level is flat shapes, this is in accordance with the Ministry of Education and Culture (2013), in the 2013 Curriculum students have studied flat shapes since students were in class II of elementary school. Learning geometry at a basic level is very easy to find and apply in everyday life, because many forms of buildings and games around us are related to geometry. When students are in class II of elementary school, they are introduced to various flat shapes, for example; square, triangle, rectangle, parallelogram, kite, rhombus. This learning begins with an introduction to the shape, characteristics and meaning of flat shapes. Geometry has a greater opportunity for students to understand than other branches of mathematics because students have been familiar with geometry since they have not yet entered school, such as lines, planes and space through daily activities (Abdussakir, 2010).

The process of learning mathematics, especially in flat shapes, is often considered difficult by students, so this is a problem that must be considered. For this reason, the need for guidance and training for students is very much needed in the process of learning mathematics, especially in flat shapes, when faced with questions that different students will experience confusion (Jarmita 2014). The background causes students have difficulty in using the mathematical concept of flat shapes. In using the concept of flat shapes, many students ignore the units of perimeter and area, students cannot differentiate between various types of flat shapes and their elements, it is difficult to remember the formulas used to solve question, according to Kereh, et. al. (2013), the term learning difficulties in mathematics content can be interpreted as students' difficulties which can be expressed from the pattern of errors students make in working on problems. the basics of multiplication and division were not strong enough in the previous class, and the lack of student motivation to learn apart from the difficulties faced by students was understanding how to solve flat shape problems. This was also supported by the results of research by Abrar (2014) which stated that the manifestation of students' difficulties in using the principle between others: (1) Not able to carry out discovery activities about something and be careful in carrying out calculations or algebraic operations. (2) Students' inability to determine relevant

factors and as a result they are unable to abstract patterns. (3) Students can state a principle but cannot express its meaning and cannot apply the principle.

Apart from that, understanding concepts in mathematics is the first ability that is expected to be achieved in mathematics learning objectives (Ningsih, 2016), so understanding concepts is very important for students to master in facing various forms of problems in mathematics that are being faced. The importance of understanding concepts is the basis for obtaining learning outcomes. What is expected is that the use of concepts in mathematics is related to understanding and distinguishing words, symbols and signs (Novitasari, 2016), but difficulties in using concepts often occur, this is because the mathematics learning process is not yet meaningful, so that students' understanding of mathematical concepts very weak (Soviawati, 2011).

With the current progress and developments in Indonesia, there have been changes to the curriculum in the world of education. This change occurred because it had the aim of perfecting the previous curriculum, where this curriculum was adapted to developments in science and technology and the demands of the current era. Apart from that, another aim of curriculum changes is that the curriculum must be able to answer future challenges in terms of knowledge, attitudes and skills so that it can adapt to an ever-changing environment. With the new curriculum, this becomes a challenge for teachers in carrying out learning activities at school. According to (Indarta et al., 2022) to face various challenges requires a strategic effort with various understandings of the role of each element or educational subject itself. So the role and challenges of teachers are of particular concern in implementing the new curriculum, because this curriculum provides opportunities for teachers to develop their skills and abilities. This is in line with the opinion of (Daga, 2021) that teacher freedom in the learning process is the meaning of true freedom in learning.

However, in implementing the independent curriculum, many teachers still experience obstacles and difficulties in adapting to the independent curriculum, this is due to inadequate facilities and technology which are not yet able to support teachers' activities to be more effective and efficient. The implementation of the independent curriculum also certainly brings significant changes for teachers and schools, both in terms of administration, learning models, learning media, learning approaches and learning evaluation processes. In essence, independent learning means deepening the competence of teachers and students to innovate and upgrade the quality of independent learning (Baharuddin, 2021).

Therefore, there is a need for a learning design that can help teachers in classroom learning activities. Batubara (2018) states that learning design helps make it easier for educators or designers to plan learning activities that are effective, efficient and in line with the objectives. Through learning designs designed by educators or designers, active and interactive

communication patterns and learning activities can be created between students and educators. This is what makes learning design important to develop as an effort to solve a learning problem, for example in mathematics learning about flat shapes.

The development of learning designs using Origami in Flat Building material is oriented towards developing students' critical reasoning abilities in line with research conducted by Mawarni, M. (2019). Research shows that using origami paper media can increase students' understanding of plane material, based on the results of tests carried out, students' understanding has increased. Apart from that, it is also in line with research conducted by Marwan, A. (2013)This research states that the use of origami in plane material increases students' interest and motivation in learning so that based on the results of tests conducted by researchers, it has increased. Apart from that, it is also in line with research conducted byIna Rosiana (2011)with the help of origami paper media in learning mathematics with flat shapes, there is an increase in student learning outcomes and student responses to learning using media are more enthusiastic, active and creative.

Critical reasoning in this research is more about knowing based on previously proven truths by making new statements and making new conclusions, but not just the final result. From relevant research that has been conducted by other researchers using mediaOrigamiand basic mathematical abilities, namely critical and creative reasoning. Researchers intend to develop an interesting learning design usingOrigamito increase students' enthusiasm for learning, improve students' thinking patterns, improve students' critical reasoning abilities through the use of interesting learning media in solving problems in mathematics learning.

METHOD

The method in this research is using research and development methods. In this research it is used to produce a certain product and test the effectiveness of the product (Sugiyono, 2015). The research and development that will be carried out includes aspects of effectiveness and feasibility. The development model used in this research is the ADDIE model (Analysis, Design, Development or Product, Implementation or Delivery and Evaluations). The analysis stage is the stage where researchers analyze the need for developing learning designs and analyze the feasibility and requirements for development. The analysis stage carried out by the author includes needs analysis, learning material analysis, task analysis, concept analysis, principle analysis and analysis of student characteristics. The second stage of the ADDIE model is the design stage. At this stage, start designing or planning a learning tool that will be developed based on the results of the analysis in the previous stage. Next, the design stage continues with collecting the learning materials and media needed to design learning tools. The development stage is the product realization stage. At this stage the development of the learning design is carried out

according to the plan. The fourth stage is implementation. Implementation of the feasibility of products developed based on expert assessments. This assessment is limited to assessing material and learning media. At the evaluation stage, researchers carried out final revisions to the learning design which was developed based on input obtained from experts. The data collected in this research include: (1) data regarding learning planning in Mathematics Flat Building material for grade IV Elementary School. The Student Mathematics Book used as a learning resource is the Student Mathematics Book (2022). Meanwhile, this learning is designed using the PBL (Problem Based Learning) learning model through 5 stages, namely 1). Orienting students to the problem 2) organizing students around the problem 3) guiding individual and group investigations 4) developing and presenting work results 5) analyzing and evaluating the problem solving process.

The data collection instruments in this learning design development research are in the form of questionnaires and the evaluation instruments used are pretest and posttest questions. The questionnaire consists of a material expert validation questionnaire, a learning tool expert validation questionnaire and a teacher response questionnaire. The material expert validation questionnaire is used to assess the content of the material contained in the learning design being developed. The learning expert validation questionnaire is used to assess and revise the results of the learning media design that has been created. Media and material validation instrument grid

Evaluation instruments in the form of pretest and posttest questions are used to determine the increase in students' critical reasoning abilities.

The data collected in this research was analyzed descriptively. Data regarding planar learning design products were analyzed descriptively for each part of the learning tools that had been developed. Data regarding the quality of flat building learning designs resulting from product trials were analyzed through conversion of scores obtained from validation questionnaire sheets and then analyzed through percentage ranges. The assessment was then categorized into very unfeasible, quite feasible, feasible and very feasible categories. The evaluation instrument data in the form of pretest and posttest questions was then analyzed using the T test. The results of the T Test were then analyzed using the N Gain Score Test.

Table 1 grid of media and material validation instruments

No	Criteria	Number of Assessment Items	Item Number	Maximum score
1	Teaching Module Identity	1	1	4
2	Initial competency	1	2	4
3	Pancasila student profile	1	3	4
4	Facilities and infrastructure	1	4	4
5	Target students	1	5	4
6	Learning model in modules	2	6,7	8
7	Learning objectives in the module	3	8,9,10	12
8	Igniter question	2	11,12	8
9	Learning Activities	7	13,14,15,16,17,18,19	44
10	Bibliography	1	20	4
11	Suitability	1	1	8
12	Material accuracy	3	3,4,5	12
13	Language	2	6,7	8
14	Up-to-date material	2	8.9	8
15	Design	2	10,11	8
16	Glossary	2	12,13	8
17	Systematics	3	1,2,3	12
18	Suitability	3	4,5,6	12
19	Language	3	7,8,9	12
20	Design	3	10,11,12	12
21	Student Worksheet Format	3	1,2,3	12
22	Fill in the Student Worksheet	3	4,5,6	12
23	Language	3	7,8,9	12
24	Design	3	10,11	8
25	Evaluation	1	1	4

RESULTS AND DISCUSSION

Analysis Stage (Analyze). At this stage, one of the aspects analyzed by researchers is the learning tools used in flat building materials, the learning media used, and the learning models used. Based on the results of interviews conducted with two class IV teachers at Elementary School 01 and Elementary School 2, it was stated that in teaching mathematics, especially material about plane figures, there were still many obstacles due to limited media, during the learning of mathematics material the teacher only carried out learning activities through learning steps. according to the characteristics of the material. However, the learning model steps have not achieved the learning objectives. The learning objectives that have not been achieved through these learning activities are critical reasoning skills, then the learning media used by the teacher is only pictures of flat figures, videos from YouTube, This learning makes students less active. The researcher then analyzed the independent curriculum learning tools by determining the learning content, chapters, learning topics, flow of learning objectives (ATP) from learning outcomes and the learning objectives to be achieved.Based on the problems above, it is necessary to make efforts to develop learning device designs using media that suit the profile of Pancasila students to improve critical reasoning abilities and student characteristics. Learning design uses media that is able to attract students' attention and focus in learning. One way to increase students' interest and learning achievement, as well as students' critical reasoning abilities, is to use creative and fun learning tools and media. To overcome several existing problems, a flat-shaped learning design using origami was developed to improve students' critical reasoning abilities. IV Elementary School.

Design Stage. The design or planning stage in preparing a learning design begins with determining the main things needed in the learning design, teaching modules, teaching materials, student worksheets, and evaluation questions.developed to have characteristics that are appropriate to the material and can improve students' critical reasoning abilities, the material developed is also adapted to the Mathematics learning content, and the content in the learning tools is adapted to the profile of Pancasila students. After selecting the material in the learning tool, the material planning stage is carried out. Researchers create designs according to the material that has been selected during the planning stage of learning media design. The learning design plan that has been prepared is used as a reference for the next development stage.



Figure 1 Learning Design Plan

In the design of teaching materials there is a cover for the lesson content, material, topics and classes, as well as the name of the compiler. In the material section there is material on the meaning of flat shapes, the meaning of polygons, the properties of flat shapes, the composition and decomposition of flat shapes.

Development Stage (Development). This development stage is the product realization stage. At this stage the researcher developed a flat-building learning design product using origami to facilitate the profile of Pancasila students with critical reasoning dimensions guided by the Mathematics Book for Grade IV Primary School Independent Curriculum. In developing this Learning Design the researchers compiled starting from; Teaching Modules, Teaching Materials,Student Worksheets and Evaluation Questions.

The next step in this stage is to validate the learning design. The learning design is based on the Mathematics Book for Class IV Elementary School Students with the Independent Curriculum. The learning design prepared is in accordance with the characteristics of the Pancasila student profile to facilitate critical reasoning skills that are validated by material validation experts, media validation experts using validation questionnaires. Material validation trials were carried out by two experts, namely PGSD lecturers at PGRI University Semarang and Class IV elementary school teachers. The researcher handed over the learning design development product in the form of a print out to the validator to be seen and assessed. The assessment results included no revisions to the material and the questionnaire assessment results were then totaled and presented with a percentage of 98% in the very appropriate category.

In testing for media validation experts, it was carried out by media experts, namely PGSD lecturers at PGRI University Semarang and fourth grade elementary school teachers. Researchers

handed over learning design development products in the form of print outs to validators to be seen and assessed. The assessment results included no revisions to the material and the questionnaire assessment results were then totaled and presented with a percentage of 90% in the very appropriate category. The feasibility of developing Learning Design is presented in table 2 with a percentage score of 98%, in the "very feasible" category.

Table 2 Expert Assessment of Learning Tool Validation and Material Expert Validation

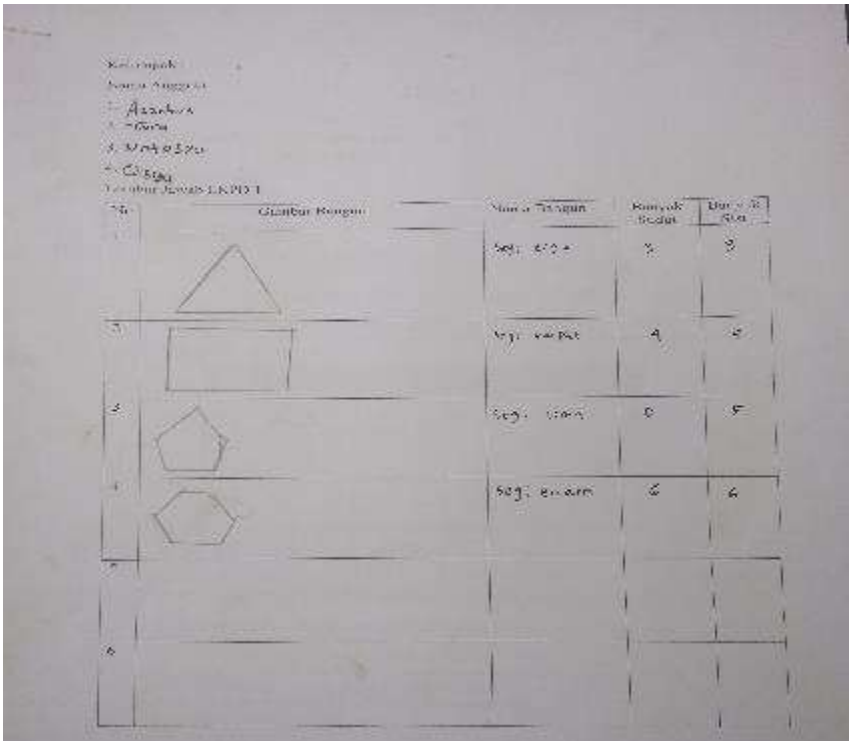
No	Aspect	Score Validator I Device P	Score validator II Device P	Validator Score I Material	Validator score II Material	Maximum score
	Teaching Module					
1.	Teaching Module Identity	4	4	4	3	4
2.	Initial Competency	4	4	3	4	4
3.	Pancasila Student Profile	4	4	4	3	4
4.	Facilities and infrastructure	4	4	3	3	4
5.	Target Students	4	4	4	3	4
6.	Learning model in Modules	8	8	7	7	8
7.	Learning objectives in the module	12	12	11	11	12
8.	Igniter Question	6	6	7	8	8
9.	Learning Activities	28	21	26	28	28
10.	Bibliography	3	3	3	4	4
	Teaching materials					
1.	Suitability	4	4	3	4	4
2.	Material accuracy	12	12	11	11	12
3.	Language	8	8	6	7	8
4.	Up-to-date material	8	8	8	8	8
5.	Design	4	4	3	4	4
6.	Glossary	8	8	7	8	8
	Instructional Media					
1.	Systematics	12	12	10	11	12
2.	Suitability	12	12	12	12	12
3.	Language	12	12	9	11	12
4.	Design	12	12	12	11	12
	Student Worksheets					
1.	FormatStudent Worksheets	12	12	9	11	12
2.	ContentsStudent Worksheets	12	12	12	11	12
3.	Language	12	12	11	9	12
4.	Design	8	8	8	8	8

No	Aspect	Score Validator I Device P	Score validator II Device P	Validator Score I Material	Validator score II Material	Maximum score
	Assessment					
1.	Evaluation	4	3	4	3	4
	Total score	217	216	197	203	220
	Percentage		98%		90%	
Very Eligible Category						

The assessment of the feasibility of learning tools from development products is presented in Table 2. The average expert assessment score is 98% in the "very feasible" category. The assessment of the feasibility of the language content of the development product is presented in Table 2. The average expert assessment score is 90% in the "very feasible" category.

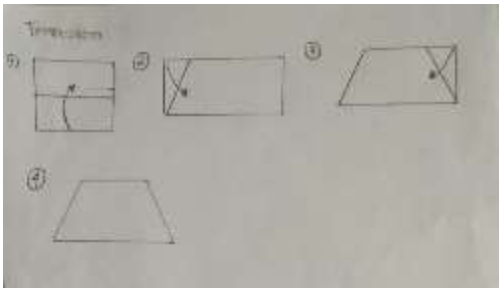
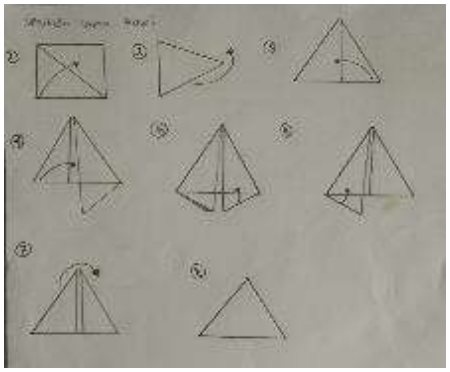
Implementation stage (Implementation) In the next stage, the researcher carried out the implementation stage of product trials for the development of flat building learning designs using origami which had been developed in real situations to determine the improvement in students' critical reasoning. At this stage, through activities at each meeting, students will work on student worksheets that have been provided using origami media. To work on this Student Worksheet, students work in groups consisting of 3-4 people in one group,

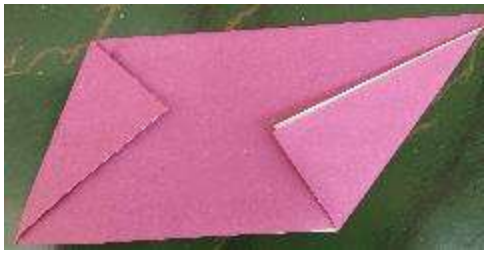
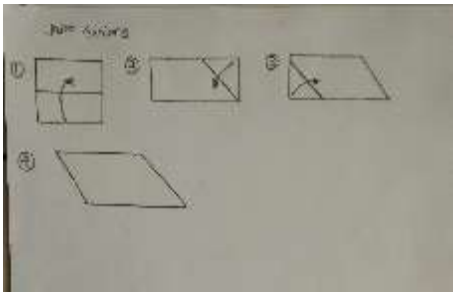
Figure 6 Results of Student Worksheet 1



In Figure 6 above is an example of the results of the Student Worksheet for learning activities at the first meeting. In the first learning activity, students were invited to understand various types of flat shapes. The activity carried out by students in this first activity was that students were given a trigger question which was then linked to everyday life, after that the teacher divides the students into 7 groups consisting of 3-4 students, after dividing the groups the teacher then gives Student Worksheets for meeting 1, Student Worksheets at meeting 1 use straw media where students are asked to cut straws into 3 parts then assembled into a flat shape and drawn on the paper provided, and so on until finished, with the teacher's guidance after completion students will be asked to present the results of their group work in front of the class.

Table 3 Different Folding Results

The folding results are different	**Folded design results**
Trapezium 	
	

In table 3 above is an example of the results of the Student Worksheet for learning activities at the second meeting. In this second meeting activity students will learn about the characteristics of flat shapes, in the second activity at this meeting students are divided into the same groups as yesterday's meeting, then each group is given origami paper, on this occasion students will fold origami paper into several shapes flat shapes, namely isosceles triangles, arbitrary triangles, equilateral triangles, squares, rectangles, parallelograms, trapezoids, rhombuses, kites, which are different from the origami fold designs in the learning design with the guidance of the teacher, on this occasion the students asked to be creative to their own abilities, after finishing folding, students will be asked to present the results of the fold, by stating the name of the flat shape, then explaining the characteristics of the flat shape in front of the class.

In the next stage, what the researcher carried out was to measure students' critical reasoning abilities, namely by providing pretest and posttest questions on the evaluation question sheet for the same pretest and posttest questions used. The results of the pretest and posttest scores are then analyzed based on the critical reasoning indicators contained in the questions. After carrying out the analysis, the pretest and posttest results were classified as the level of critical reasoning ability. Below is a diagram of the pretest and posttest results.

Based on the diagram of the pretest results above, it can be seen that there are 27 students who have low critical reasoning abilities, while there are 1 students who have moderate critical reasoning abilities, while there are no students who have high critical reasoning abilities, with the lowest pretest score being 10 and the highest pretest score was 70 with an average score of 35.71

Figure 9 posttest diagram



Based on the table diagram of the Posttest results above, it can be seen that there are 4 students who have low critical reasoning abilities, while there are 6 students who have moderate critical reasoning abilities, and 18 students who have high critical reasoning abilities. With the lowest posttest score being 45 and the highest posttest score being 95. With an average score of 78.9. From the two diagrams above, it can be concluded that there has been a significant increase in critical reasoning.

After carrying out the classification, a T test was carried out to determine the difference between the pretest results before treatment and the posttest results after treatment.The T test used in this research is a paired t-test using the Microsoft Excel application. T test results using α of 5% and a level of freedom of 28,The T table value obtained = 1.0711 and T count = 9.9792. The results of the T test are then interpreted by referring to the Ho acceptance criteria, where if - T table < T count < T table then the obtained value of T count is not in the area between T table and - T table, so it can be interpreted that Ha is accepted. The results of this interpretation are the basis for the conclusion that there is a difference in the results of the critical reasoning skills test between before and after using the developed Flat Building Using Origami learning design.

Then the next stage is to carry out a normalized N Gain score test to compare the results of the pretest and posttest analysis. The results of the Gain analysis show that the gain with high criteria is in the gain interval > 0.70 for 16 students. Meanwhile, the criteria for moderate gain or gain interval were $0.30 < g \leq 0.70$ for 11 students. And the low gain criterion or gain interval $g \leq 0.30$ is 1 student. Based on the results of these calculations, an average gain of 0.73 was obtained. So overall this research shows a gain with high criteria.

Next, the researchers carried out an analysisanalysis of the indicators on the questions, and determining the number of students who made mistakes in working on the questions according to the indicators on the questions that have been created in accordance with the learning objectives. These question indicators aim to measure students' critical reasoning abilities before the use of learning design is applied and after the learning design is applied. This indicator analysis is divided into two, namely before implementing the learning design and after implementing the learning design, which is based on the pretest results and posttest results that have been carried out by students with a total of 28 students, and the pretest and posttest questions used are the same. Then, conclusions are drawn based on indicator analysis

Table 4. Analysis of Critical Reasoning Indicators Questions

Problem Critical Reasoning Indicator	**Error analysis**	**The number of students**
Ask and answer questions	Students have difficulty understanding the questions provided in the questions	6
Putting forward an argument	Students have difficulty in conveying appropriate arguments because students have difficulty understanding the properties of flat shapes	14
Comparing observation results with references	Students have difficulty comparing the results of observations obtained on the questions because students do not understand the instructions of the questions	23
Observe and consider	-	-
Induce considering the results	Students have difficulty considering the results of the questions	8
Problem solving strategies	Students experience difficulty in carrying out problem solving strategies in a problem	15

Evaluation stage (Evaluation) The evaluation stage in this research was after carrying out learning using a flat shape learning design using origami to facilitate the profile of Pancasila students with critical reasoning dimensions, then the researcher gave a response questionnaire to

the class IV teacher to provide responses to the learning design that had been applied to class IV students. Results of teacher responses to learning designFlat building using origami to facilitate the Pancasila student profile with critical reasoning dimensionsthat has been developed has a percentage score of 100. This score is in the range 81-100, which means the learning device is in the "very appropriate" category.

DISCUSSION

The flat shape learning design using origami was developed with the aim of facilitating the Pancasila student profile of the critical reasoning dimension. The use of origami media on flat material can develop creativity and increase imagination in children. This was stated by Ahira (2013) that, "origami is an art activity that is full of benefits for children, one of which is that it can hone children's creativity and imagination." Using appropriate learning media is very important and necessary in the learning process so that learning activities and learning objectives can be achieved well and run effectively and efficiently. As explained by Brigges (in Sadiman, 2011: 6) that, "Media is any physical tool that can present messages and stimulate students to learn". Furthermore, Hamalik (in Arsyad, 2011: 15) stated that, "the use of learning media in the teaching and learning process can generate new desires and interests, generate motivation and stimulation of learning activities and even have psychological influences on children.

Apart from that, the use of origami media can improve students' critical reasoning abilities, making students more active and creative in learning, because by using origami students can be creative with their abilities. The use of origami media on flat material really helps improve students' critical reasoning abilities. and student learning outcomes are in line with research conducted by Ina Rosiana (2011). The use of origami. The results of this research state that learning to build flat using folded paper media or origami has increased student mathematics learning and student responses to learning using media are more enthusiastic and active and creative. Apart from that, the use of origami media in learning flat shapes, material on the properties of flat shapes, can improve student learning outcomes. This is in line with previous research, namely research conducted by Winarti, ES (2016). The results of this research state that there is an increase in students' mathematics learning outcomes in identifying the properties of flat shapes using folding paper or origami.

Data on the feasibility of digital teaching materials can be obtained from the results of media expert validation and learning material expert validation. Media expert validation is aimed at determining the quality of the media. Planar Building Learning Design Using Origami to Facilitate the Pancasila Student Profile Dimensions of Critical Reasoning. Learning material expert validation provides an assessment. Based on the first material validator and the second material validator, a result of 98% was obtained in the "Very Eligible" category. This shows that the flat shape learning design using origami to facilitate the Pancasila student profile of the critical reasoning dimension is included in the "very good" and "suitable for use" categories.

The results of the validation by media experts 1 and media experts 2 are to find out the extent of the suitability of the material for flat building learning design products using origami to facilitate the profile of Pancasila students with the critical reasoning dimension that researchers have developed in the class IV Mathematics lesson content. From the results of the first and second media expert validators, a score of 90% was obtained in the "Very Eligible" category. This shows that the flat shape learning design using origami to facilitate the Pancasila student profile of the critical reasoning dimension is included in the "very good" and "suitable for use" categories.

After the validation stage, the next step is the product implementation stage to measure the level of students' critical reasoning abilities and effectiveness in this research. The researcher used a pretest and posttest evaluation sheet to measure students' critical reasoning abilities before implementing using media and after using media. Flat building learning design using origami to facilitating the profile of Pancasila students, the critical reasoning dimension of class IV elementary schools has met the effective criteria for improving students' critical reasoning abilities based on the results of pretest and posttest analysis in class IV elementary schools, which initially had an average score of 35.7 to 78.9 with a difference in value increase of 43.2. The results of the N-Gain data analysis of 0.73 show an increase with high criteria and the t-test results obtained tcount of 9.9792 which was then compared with ttable of 1.0711, therefore tcount > ttable so Ho was rejected and Ha was accepted.

The researcher has carried out the validation stage starting from media validation, material validation, and implementation, after which it continues with describing the results of the teacher response questionnaire, namely the class IV teacher. The results of

this teacher response assessment were carried out to determine the grades of grade IV elementary school teachers. From the teacher score data, a score of 100% can be obtained in the "Very Decent" category. This shows that the Flat Building Learning Design Using Origami to Facilitate the Pancasila Student Profile is feasible and valid and can be used in Mathematics lesson content during the learning process.

CONCLUSION

Based on the results of research regarding the development of Flat Building Learning Designs Using Origami for Class IV Elementary Schools, It can be concluded that the use of a flat shape learning design using origami to facilitate critical reasoning skills on flat shape material as a whole has been very good starting from learning activities, presentation of material, student activities in each meeting, and the questions provided have been able to involve students to be able to active in learning activities, and students can also develop their creativity, so that learning activities become more systematic, active, creative and fun. However, the development of students' critical reasoning abilities has not all been fulfilled. This can be seen in the achievement of the critical reasoning indicators in the questions. There are still many students who have not been able to fulfil these indicators. The indicator that many students still get wrong is the indicator of comparing the results of observations and references. Almost all students still weak in achieving this indicator, because there are still many students who make mistakes in answering the questions on this indicator, apart from that it can also be seen through the students' post test scores that there are still students whose scores do not meet the minimum completeness criteria, this is because students do not understand the instructions on the questions, in general Overall, the score has indeed increased, but it has not yet met the target of completion, apart from that, in student activities, namely the activity of folding origami paper into flat shapes, there are still those who imitate the origami folding designs in design books, so students are considered less creative in folding origami into a flat shape, in a lesson choosing the right learning media that suits the material is very important, because the media will help the teacher in conveying the message and objectives intended in the lesson, in this learning design in the teacher and student reading section the activity of folding origami into a flat shapes only have two ways, it would be better to provide many ways so that students become more creative in developing their critical reasoning skills and creativity in learning flat shapes. Improvements for teachers: In learning activities, teachers

should better master class control and approach students in class, and be able to guide students in the ongoing learning process.

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