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ANALYSIS OF STUDENT RESPONSE TO KOJA BULOK MEDIA

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Abstract

Based on observations and interviews conducted by researchers, students are less active in learning and learning media are still limited. Grade V students find it difficult to understand cube and beam webs. This research aims to develop Koja Bulok media. Koja Bulok media can be used as a varied learning media in mathematics in elementary school. It is hoped that Koja Bulok Media can make students more active in mathematics. This research uses Research or Development (Research and Development). The research procedure uses seven stages, namely data collection, planning, product design, product design validation, product design revisions, product trials and product revisions. The research instrument was in the form of observation sheets, a list of interview questions, and a questionnaire. Koja Bulok learning media that have been developed and tested through a validation questionnaire. The final assessment of media validation was 88.48%, subject matter experts were 88.48%, and language expert validation was 86.06%, with an average rating of 88.73% categorized as very feasible. Student response questionnaire obtained an average rating of 98.66%. This shows that Koja Bulok media is suitable for use in the mathematics learning process for fifth grade elementary school.

Keywords: Student Response , Koja Bulok, Mathematics.

1. INTRODUCTION

SD Negeri 3 Ringinkembar Ringinkebar located in the village, district, Sumbermanjing Wetan, Malang is one of the primary school curriculum, 2013. Based on interviews that researchers do against teachers SD Negeri 3 Ringinkembar, students are less active in pembelaj ar s and less attention to learning delivered by the teacher, and is still limited in the procurement and use of media. This makes it difficult for students to understand the material presented by the teacher, as evidenced by the average grade of the end of semester assessment in mathematics subject obtained a value of 57.7. The results of observations made by researchers, obtained information on the use of media in learning mathematics material cube and block webs are still lacking, so students have difficulty understanding what is conveyed by the teacher. Based on information that researchers obtained from interviews and observations, researchers developed a media that can meet the learning needs, namely the Koja Bulok media learning innovations .

This research was carried out at SD Negeri 3 Ringinkembar, Ringinkembar village, Sumbermanjing Wetan sub-district, Malang district in 2018/2019 school year. The number of students is 15 children consisting of 9 boys and 6 girls. The material is the use of cube nets and blocks in daily life in mathematics. Koja Bulok stands for cube and beam net. Koja Bulok's media includes suitcases and various kinds of cube and beam webs. Suitcases and nets are made of plywood. Suitcases are used to store cube nets and beams. Cube webs and beams are made in various models, ranging from models of nets that can be formed to nets that cannot be formed. Cubes and blocks of various colors. The outer nets are painted in one color, while the inner nets consist of three colors. The same color on the inside of the webs indicates the opposite side.

The purpose of this research is to find out the feasibility of Koja B ulok media innovation for grade V elementary school learning, and to find out students' perceptions of instructional simulations for him Koja B ulok for grade V elementary school mathematics learning.

Development is a way of planning systematic learning to determine everything that will be carried out in the process of learning activities by paying attention to the potential and competence of students (Majid, 2005: 24). So the development of learning is expected to be more abstract, not just a perception that is difficult to apply in life. Learning development is an effort to improve the quality of the learning process, both materially and in method and substitution. Materially, it means from the aspect of teaching materials that are adjusted to the development of knowledge, while methodologically and the substance is related to the development of learning strategies, both theoretically and practically (Hamid, 2013: 125). From these two theories it can be concluded that research development is a step to develop a new product or improve existing products, which can be accounted for.

Media is a tool that can be used to convey information to students. Briggs (in Anitah, 2011: 64) states that learning media are physical means to convey learning content such as books, films, videos, *slides* , and so on. According to WS Winkel (in Susanto, 2012: 45) learning media is media that covers everything that can help students and teachers to achieve learning goals. While according to (Arsyad, 2013: 4) states that the media is a component of learning resources or physical vehicles that contain instructional material in the student environment that can stimulate students to learn. From the three expert opinions, it can be concluded that learning media is everything given by the teacher to students to deliver learning material so that the expected competency can be achieved.

Media has various functions and benefits when applied in learning. As said by Kemp & Dayton (in Arsyad, 2013: 23) which explains some of the functions of the media, the main function if the media is used for individuals, groups, or a large listener group, namely: Learning media functions to motivate students' interests or actions . Achieving this goal will affect attitudes, values, and emotions, learning media can be used in presenting information to students. general form of presenting information that functions as an introduction, summary report, or background knowledge, learning media can be instructions for engaging students in the form of real activities so learning can occur. Learning media must be able to provide a pleasant experience and meet the needs of individual students.

Complementing this opinion, Anitah (2011: 69) explains some of the functions of media in learning, which shows the importance of the role of media in learning, namely: learning media as a means of helping to create more effective learning situations, learning media is an integral part of the whole learning process, learning media must be relevant to the competencies to be achieved and the content of learning itself, learning media not only serves as an entertainment tool to attract the attention of students, learning media can function to accelerate the learning process, learning media functions to improve the quality of the teaching-learning process learning media lays concrete foundations for thinking.

Based on the description, it shows that the function of the media in learning, namely to increase learning motivation, make learning effective, improve the quality of learning, and as a concrete basis for thinking. With the learning media, competencies are expected to be achieved optimally.

Research from Sri Purwati (2014) entitled *Improving Learning Outcomes Determining Cube and Beam Nets Using Plotted Cardboard Media Class V SDN Jetis 2 Mojokerto,* shows that learning outcomes have increased. In the first cycle the percentage obtained was 74.45% and in the second cycle it became 93.2%. So that teacher activity has increased by 18.75%. The strengths of this research are that media is easy to obtain and teach, while the disadvantages are that media is less attractive because it is only one color and the material is not waterproof. The development of this research is that researchers make nets with many colors and are also waterproof.

Research from Hangesti widoretno (2011) with the title *Improving Learning Outcomes of Cubes and Beams Nets through the Stad Model in Class V at Tanjungrejo II Elementary School in Malang*, showed an increase of 4.14%. The advantage of this research is that students can work together to solve problems, and the drawbacks of the media used are less attractive and easily damaged because it is only made of paper and without color. The development of this research is that researchers make nets with many colors and use materials that are not easily damaged (waterproof).

Research from Khimatun Khoeriyah (2014) entitled *Improvement of Mathematics Learning Outcomes Material of Netting and Building of Beams and Cubes Space Through the Media Objects of Kongkret in Class V Students of Semester II MI Ma'arif Singasari Karanglewas Banyumas Tahum Academic Year 2013/2014* shows in cycle I the average value of the average is 64.78 and in the second cycle the average value is 73.48. It can be concluded that the use of concrete objects media in the material of building blocks of blocks and cubes can improve students' understanding in learning. The advantage of this research is that the media is easy to obtain and saves money because it uses used toothpaste boxes and lime boxes. The only drawback is that the media are less attractive and varied. The development of this research is that researchers make nets with many colors and also use materials that are not easily damaged or waterproof. As well as making a suitcase of materials that strong to keep the nets.

2. RESEARCH METHOD

The research approach used in this study is to combine qualitative and quantitative approaches, while the type of research used is Research or *Development* . Research and development is research used to produce certain products, and test the effectiveness of these products (Sugiyono, 2015: 297). This research and development was used because researchers had to make innovations in the media of Koja Bulok (Karing Net-Kubus and Beam Suitcases). The research procedure uses seven stages, namely data collection, planning, product design, product design validation, product design revisions, product trials and product revisions. The following is the framework and procedure of Koja Bulok's media research for learning mathematics in grade V elementary school:

Research Implementation:

1) Data Collection

Collecting data relating to the making of Koja Bulok Media, among others, syllabus (KD), mathematical thematic book assessment instruments, modules, journals, books and other sources such as sources from the internet. The researcher's data can also be based on the results of the researcher's interview, that the fifth grade students of SD Negeri 3 Ringinkembar have difficulty in understanding cube nets and beams.

2) Planning

Through the media of Koja Bulok, students are expected to be able to easily understand the material in cube and beam webs.

3) Product Design

It is hoped that the Koja Bulok media can be used by students and used as student learning guides to make it easier to understand cube nets and blocks. The product that will be used in this research is Media Koja Bulok.

4) Design Validation

Validation of the Koja Bulok media was carried out by presenting 3 experienced experts to assess the design of the product. This product is tested directly to media experts, material experts and linguists.

5) Design Revision

After being validated by several experts (media, material, and language), the weaknesses will be known then these weaknesses can be reduced by improving the product. The design revision also aims to find and produce the best designs.

6) Product Revision

At this stage, Media Koja Bulok is improved based on suggestions and input from student responses on a large scale trial so that it will produce the final product.

7) Publication

The best product in the form of Koja Bulok Media has passed all the stages and has undergone previous improvements and improvements. The final results of Koja Bulok Media can already be directly used by fifth grade elementary school students as learning resources.

The research design that the researchers did was twofold, the first to test product validity, the second to test student responses. The population of this research is the fifth grade students of SD Negeri 3 Ringinkembar with the number of students 15. Sampling in this study uses a saturated sample technique, namely by using all samples for research.

Data collection techniques using observation, interviews, validation, student questionnaire responses and validation. Research instruments that researchers use in the form of observation sheets, lists of interview questions, and questionnaires. The data obtained were analyzed with qualitative and quantitative analysis in order to determine the feasibility and effectiveness of Koja Bulok media products.

Data management with quantitative analysis is used to determine the feasibility and effectiveness of developed Koja Bulok media products . Validation questionnaires were given to experts or validators. Questionnaire answers for experts using a *Likert* scale . The measured variables are translated into indicator variables. The *Likert* scale used consisted of a score of 1 to 5. After the questionnaire was validated by the validator, then the questionnaire was analyzed and percentage. The score categories on the *Likert* scale are explained in the following table 1 :

Table 1 Rating Categories on the *Likert* Scale

No	Score	Information
1	5	Very good
2	4	Well
3	3	Pretty good
4	2	Not good
5	1	Very bad

(Sugiyono, 2015: 134-135)

The acquisition of validator research data is analyzed by the formula below (Sugiyono, 2015: 418):

$$\text{Percentage score} = \frac{\text{number of assessment scores}}{\text{maximum rating score}} \times 100\%$$

The percentage obtained is then converted into qualitative data as in the following table:

T abel 2 Conversion Qualitative Data

No	Level of Achievement	Information
1	81% - 100%	Very decent, no need to revise
2	61% - 80%	Decent, no need to revise
3	41% - 60%	Not feasible, needs to be revised
4	21% - 40%	Not feasible, needs to be revised
5	<20%	Very improper, needs to be revised

(Arikunto, 2010: 35)

If the validation results show a percentage of less than 60%, then the product is declared less suitable for use in the learning process. Conversely, if the results of product validation and trials show a percentage of more than 61%, then the product gets a positive response from the validator and can be declared eligible to be used as a support for learning the operations of addition and subtraction.

Analysis of the data obtained from the results of class V students' responses to the Koja Bulok media . The results were analyzed to find out the attractiveness of the Koja Bulok media . The assessment of attractiveness data uses the *Guttman* scale . The *Guttman* scale is a measurement scale with firm answers such as "yes-no", "right-wrong", ever-never ", and so on. The form of assessment uses a *checklist* with the answer choices "yes - no". The guttman scale measurement categories are as follows:

Table 3 Winning Assessment Categories on the Guttman Scale

No	Score	Information
1	1	Yes
2	0	Not

(Modifications from Sugiyono, 2015: 96)

Attractiveness data acquisition can be used the following formula:

$$P = \frac{\sum x}{N} X\ 100\%$$

Information :
P = validator percentage acquisition
$\sum x \sum x$ = total score of each selected criteria
N = ideal number of scores

Table 4 Qualification Level of Achievement of Student Response Results

No	Level of Achievement	Information
1	60% - 100%	Positive
2	0% - 50%	Negative

3. RESULTS AND DISCUSSION

Stage design and development of product form the beginning of the development of media Koja Bulok using several stages , namely: m -finding material on the web of cubes and blocks based on the suitability of the RPP and the syllabus is being used and to consult with classroom teachers V SD N 3 Ringinkembar , p Making available tools and material that will be used in the manufacturing of Koja Bulok media products . Tools used, namely, p enggaris, g ergaji , hammer , paintbrush , pencil , k ertas rub (sandpaper) . Making materials in the form of t riplek , k ayu size of 5mm , p I was small , e ngsel , glue k ayu , paint k ayu (various colors) , p egangan closet doors , g embok , s ekrup . The next stage is the implementation of Koja Bulok media production. Until a suitcase is formed, cube nets and beam nets. Has il from the development of products in the form of media suitcase cube nets and beams made of plywood. Media is made from plywood so that the media is strong waterproof and can be used repeatedly.

The feasibility of developing the Koja Bulok media for mathematics learning in grade V elementary school, seen from the results of the validation conducted by the researchers to 3 media experts, 3 material experts, and 3 linguists. Researchers validated media experts and linguists 3

times, while validation with linguists was done 2 times. Based on the results of the validation of the feasibility of the Koja Bulok media by material experts, media experts and linguists obtained an average percentage results as follows:

Table 5 Results of First Validation

Expert Validator	Percentage	Criteria	Validator Suggestions
Media Expert	70.9%	Can be used with revisions	Need plus decoration on suitcase , b uku plus identity , k ejelasan of procedures for use
Material Expert	60.559%	Can be used with revisions	Clarity of procedure for use
Linguist	69.09%	Can be used with revisions	Note the spelling, use of punctuation and writing the title of the picture , re-write the words that have not been exact

Table 6 Results of First Validation

Expert Validator	Percentage	Criteria	Validator Suggestions
Media Expert	86.66%	Can be used with revisions	In the box needs to be added in the storage slot pejunjuk book , p enggantian material for the guide , r evisi book cover
Material Expert	74.44%	Can be used with revisions	Need to improve the steps to use the media so that more detail and order
Linguist	86.06%	Can be used without revision	-

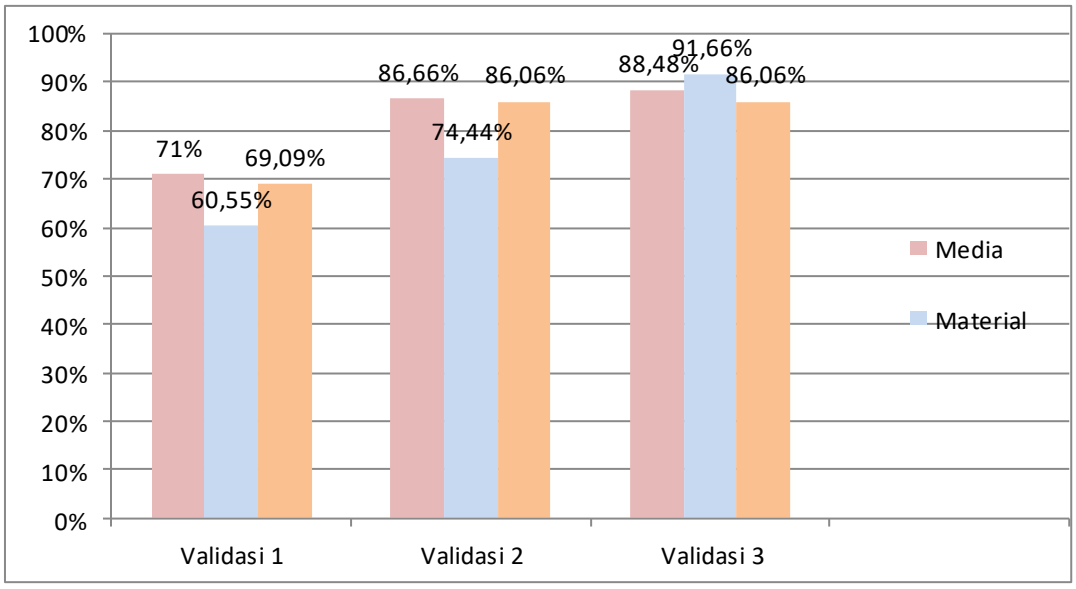
Table 7 Results of First Validation

Expert Validator	Percentage	Criteria	Validator Suggestions
Media Expert	88.48%	Can be used without revision	-
Material Expert	91.66%	Can be used without revision	-
Linguist	86.06%	Can be used without revision	-

Table 8 Overall Results of Validation

Validation Results	Average Expert Validation			Criteria
	Media	Material	Language	
1	70.9%	60.559%	69.09%	Well
2	86.66%	74.44%	86.06%	Very good
3	88.48%	91.66%	86.06%	Very good

From the data in table 4 it can be concluded that Koja Bulok Media can be declared Very feasible and accepts the development of Koja Bulok media as feasible for learning mathematics in grade V elementary school. The following graph is for knowing improvements at each stage of validation;



Graph 1 Average Validation Results

Based on graph 1 The average validation results received the development of Koja Bulok media suitable for learning mathematics in grade V elementary school.

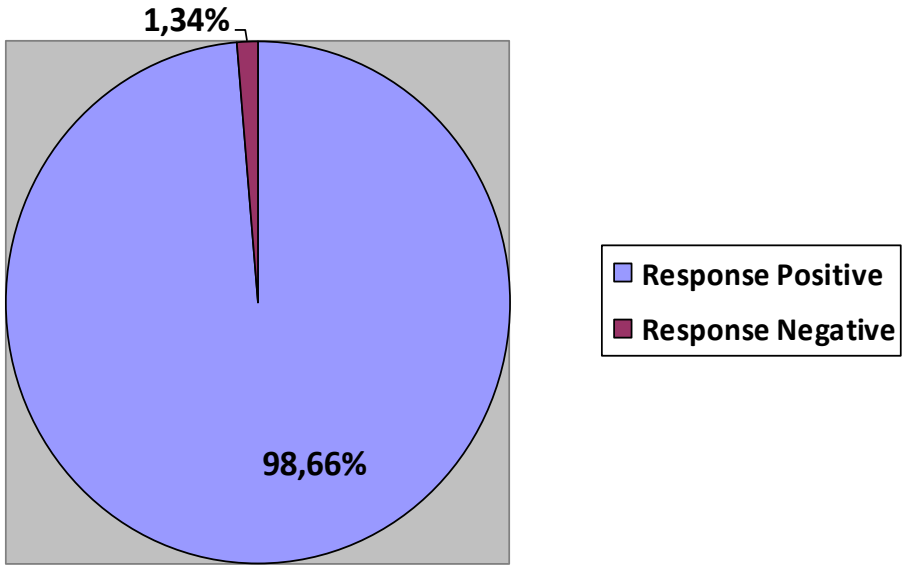
To find out students' responses to the Koja Bulok media the researchers conducted a product trial with a simulation. There are three steps in the simulation conducted by the researcher. Step p ertama teacher m embagi students into three groups, each group consisted of 5 students. The teacher distributes nets to each group. Each group gets 7 cube nets (5 nets can form a space building and 2 nets cannot form a space building) and 7 block nets (5 nets can form a space building and 2 nets can not form the wake of space). The teacher asks students to form a net into a building and observe it (because there are webs that cannot form a space). The teacher asks students to observe the shapes of cube nets and blocks. The teacher leads students to pay attention to the arrangement of flat shapes that form nets of building space. The teacher directs students to mention the flat shape that forms cube nets and beams and their numbers. The teacher facilitates students to ask if there is something that is not understood. The teacher answers questions from students. The second step , teachers share group assignments with each group. The group task is limited to 15 minutes, the group that finishes first gets more grades (+5). After all groups have finished working, each group is invited to present the results of their assignments in the order in which the group finished first. The presentation time is limited to a maximum of 15 minutes. The assignment assessment is done during group presentations. The third step , each student is welcome to take 1 net of cubes and 1 net of blocks. The teacher asks each student to draw cubes and beams and their nets in a book. The size of the image is determined by the student. The images are colored according to the webs they have chosen. Maximum drawing time is 25 minutes. The teacher asks students to draw 2 cube nets and 2 block nets on cardboard. The net model must be different from the nets they had drawn. The picture does not need to be colored. Maximum drawing time is 15 minutes. The teacher directs students to cut the picture of the webs they have made on cardboard. The teacher guides students in folding the picture that has been made according to the

sides of a square or rectangle arranged. The teacher asks several students to come to the front of the class and show the webs of cubes and blocks they have made. Students who dare to move forward get added value (+10). Sete was tested researchers me m shared student questionnaire responses. The following results from the student response questionnaire:

Table 9 Results of Student Responses

Respondents	Score Results	Suggestions and critics
1	10	I like Koja Bulok nets
2	10	I like and be understanding
3	10	I like studying with Koja Bulok media
4	10	I became more understanding
5	9	
6	10	I like, and understand the web of blocks and cubes
7	10	I like Koja Bulok nets
8	9	
9	10	I like Koja Bulok lessons
10	10	I like Koja Bulok nets
11	10	I like the Koja Bulok media
12	10	I understand more
13	10	I became more understanding of cube and block webs
14	10	I love the Koja Bulok media
15	10	Yes, I am happy with Koja Bulok's media, and I have a better understanding of cube and block webs
∑	148	
%	98.66%	

The following is a graph of the results of student responses to the Koja Bulok media:



Graph 2 Student Response Results

Based on the results of students' responses to the Koja Bulok media by 15 respondents , grade V students of SDN 3 Ringinkembar, received a score of 148 with an average student giving a score of 9.86, and a percentage of 98.66% was obtained including a positive response and 1.34% response negative. From these data, it can be concluded that the Koja Bulok media can be used for learning mathematics in the fifth grade elementary school and the instructional simulation of the Koja Bulok media for learning the fifth grade elementary school gives rise to positive student responses received.

4. CONCLUSION

Based on the results of research and development of the Koja Bulok media, it can be concluded that the Koja Bulok media obtained validation 1 results from 70.9% media experts, 60.55% material expert validation, 69.09% language expert validation. Validation 2 the results of the validation there was an increase of 86.66% media experts, 74.44% material experts, and 86.06% linguists. Validation of stage 3 also experienced an increase in the results of validation from 88.48% media experts, 88.48% material experts, and 86.06% language expert validation. Based on these three results, the Koja Bulok media entered in a very decent qualification, there was no need to revise . So that the Koja Bulok media can be used for grade V elementary school mathematics learning. Based on the results of student responses, 15 respondents liked learning to use the Koja Bulok media. Of the 15 respondents received a total score of 148 or 98.66%. Qualification of the achievement level of student response results 98.66, including positive responses.

5. SUGGESTIONS

Based on the results of research and discussion as well as conclusions from the research conducted, it can be proposed a number of suggestions from researchers, namely to students, in order to use the Koja Bulok media in learning so that it is easier to understand mathematics, material use of cube nets and beams in daily life. day. To the teacher to use the Koja Bulok media as a learning medium for material in cube nets and blocks in daily life, so students are more motivated in learning. To future researchers, this study only examined the use of Koja Bulok media for learning mathematics in grade V elementary school, it is hoped that researchers would further develop research by measuring learning motivation and learning outcomes. In this study, researchers only tested students' responses. It was hoped that further research would test results.

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