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Artikel

Using Pictorial Media to Improve Students' Comprehension Ability in Fraction Material

Rika Duta Wahyuni[1], Annisa Dwi Kurniawati[2]

[1]Rika Duta Wahyuni, IAIN Ponorogo
[2] Annisa Dwi Kurniawati, IAIN Ponorogo

**Corresponding Address: rikaduta29@gmail.com*

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ABSTRACT

Increasing use of learning media is an important aspect of achieving mathematics learning goals, especially in fraction material for elementary school students. However, there are still many teachers who teach material in conventional ways without using interesting learning media. This research aims to find out whether the use of pictorial media is better in improving students' understanding of fraction material. Quantitative design research with a pretest-posttest t test involving an experimental class and a control class was used to answer the research questions. A total of 32 grade 3 elementary school students were sampled in the research. The results of the research show that the use of pictorial media in mathematics learning about fractions for grade 3 elementary school students is better than ordinary learning which does not use pictorial media. How students' ability to understand fractions using pictorial media-based applications can be a recommendation for further research.

INTRODUCTION

The ability to describe a situation or problem that is currently occurring can be called understanding. According to Dian, Novitasari (2016) said that understanding can be interpreted as the ability to grasp the meaning of a concept. Understanding can also be the ability to express a definition in one's own language. Students convey understanding if they can explain what they have learned using their own words which are different from those found in Susanto, Ahmad's (2016) book. One of the important things related to student understanding is understanding related to understanding concepts. Concepts are very important in learning mathematics. because mastering a concept will really help students in learning mathematics. According to Resseffendi, E.T. (2006), says that a concept is an idea or thought that allows us to group signs (objects) into examples or it can be interpreted as an abstract mathematical concept that allows us to group (classify) objects or events. Understanding concepts is the ability to understand concepts, operations and relationships in mathematics (Arinda, Marlina. 2017).

Student understanding is an important aspect of learning objectives that needs to be sought. One way is to pay attention to the teacher's method or method when explaining the

material. In general, teachers use conventional methods and lectures when giving explanations to students, not yet involving students' real world in learning, especially in fraction material. According to Sardiman (2012), educational media is very necessary because it has several uses as follows: a. Clarify the presentation of information or messages so that they are not verbalistic, b. overcome limitations of space, time and sensory power, c. create an active attitude of students, d. and remembering student characteristics.

Learning media is one component in education that determines success in the learning process. It is important for teaching staff to understand how educators use learning media by adapting the material to be taught. Apart from that, learning will be much more meaningful if students are involved in every learning process, students are not only used as learning objects but also as subjects who can determine the direction and process of learning. In this case, teaching staff need to organize and implement teaching and learning activities so that students can actively build their own knowledge. This is in accordance with the constructivist view, namely that learning success does not only depend on the environment or learning conditions, but also on the psychological aspects of students.

One of the media that teachers can use to convey material in class is by using image media. According to Sadiman, Arief S. (2003) said that image media is an image related to learning material which functions to convey messages from the teacher to students. This image media can help students to express the information contained in the problem so that the relationship between components in the problem can be seen more clearly. Meanwhile, according to Hamalik, Oemar. (2004), said that image media is anything that is manifested visually in dimensional forms as expressions or various thoughts such as paintings, portraits, slides, films, projectors. Based on the understanding above, it can be concluded that image media is a media that is commonly used in the learning process. This is because students prefer pictures, especially if the pictures are colorful and presented according to the students' conditions and abilities. Of course, this image media will increase students' enthusiasm in participating in the learning process.

As research that has been carried out by Roshita uses image media to increase interest in learning fiqh of Class IV students at SD Negeri 09 Kamal Pagi with research results that the strategy for applying image media in increasing interest in learning for Class IV students at SD Negeri 09 Kamal Pagi is: carrying out activity steps. stated in the RPP, explaining the material, preparing reinforcement materials for the material and carrying out evaluation activities. The teacher's activity in using image media is very good, meaning that the use of image media can increase students' interest in learning fiqh. Furthermore, research was carried out by Sri Pratiwi using image media to improve the storytelling skills of class IV students at SD Negeri 09 Kamal Pagi with the research results showing that in cycle I the use of image media could improve learning activities such as asking, answering questions, discussing and arguing.

The difference between this research and previous research lies in the concept of student understanding as a solution so that mathematical understanding abilities can increase. Where in previous research it only generated students' interest in learning, whereas in this research it uses media in the learning process and students' understanding as well as to improve students' understanding abilities in fraction material. The learning process that uses media will be more effective and efficient and media can also influence the success of the learning process (shalikhah, 2016).

METHOD

The type of research carried out is a quantitative method. Research methods used in this research was a quasi-experiment with a group design Nonequivalent Pretest-Posttest Control Group Design. There are two groups in design this experiment, namely the experimental class group and the control class group. In class design The experimental and control classes are not

chosen randomly but have been determined, then both classes were given an initial test (pretest) to determine their initial abilities.The experimental class was given special treatment, namely learning by applying media Image while the control class as a comparison applies ordinary learning.Then at the end of the research both classes were given a final test (posttest) and compare the improvements.

The research was conducted at MI Ma'arif Singosaren Ponorogo. The population in this study were class III students at MI Ma'arif Singosaren Ponorogo. And the samples from this research are III A and III B, that is, you can use saturated sampling with consideration (S. Nasution. 2006). The instrument used in this research is tests/questions. The test instrument created was a written test of mathematical understanding ability based on indicators according to Yudhanegara in Pujiati. et al. (2018).

Indicators of mathematical understanding ability according to Sumarno (Natawidjaja, 2007: 682) based on research journals conducted by Muna and Afriansyah, stated that indicators of mathematical understanding ability include recognizing, understanding and applying concepts, procedures, principles and mathematical ideas.

Table 1. Instrument Grid

Indicator	Number
Recognizing the fraction	1,2,3
Understanding the fraction	4,5,6
Applying concept	7,8,10

The data obtained in this experimental research is in the form of quantitative data. The data analysis carried out was pretest and posttest data. In quantitative data techniques, normality tests and paired T tests are carried out. Data processing in this study was analyzed using IBM SPSS version 25 software.

RESULTS AND DISCUSSION

The results and discussion of the research that will be described include initial abilities students' mathematical understanding and increasing students' mathematical understanding abilities. The first data analysis carried out was pretest data analysis. Table 2 is descriptive analysis of pretest data.

Table 2. The Result of Pretest.

Class	N	Ideal score	Mean	Std. Deviation	Minimum	Maximum
Experiment	14	100	52.14	7.52	40	55
Control	18	100	50.83	7.12	40	45

Based on Table 1, it can be seen that the average pretest score for the experimental class was 52.14, while for the control class the average was 50.83. From descriptive data It can be seen that the average score of the experimental class is greater than the average score control class with a difference of 1.31. The results of the pretest data normality test are presented in Table 3.

Table 3. Normality test

	Class	Statistic	Shapiro-Wilk df	Sig
Pretest	Experiment	.219	14	.016
	Kontrol	.173	18	.296

Based on Table 2, it can be seen that the significance value of the Shapiro-Wilk test on the score The pretest ability to understand experimental class fractions is 0.016 and less 0.05

so the data is not normal. Significance value for ability pretest scores understanding of the control class fraction is 0.296 and more than 0.05 so the data is normal. Because one of the data is not normal, it is used for further analysis using the Mann-Whitney test. The research hypotheses tested are:

The research hypotheses tested are:

H0: There is no difference in the average pretest score of students' understanding of fractions between classes that use picture media and classes that use regular learning.
H1: There is a difference in the average pretest score for students' understanding of fractions between classes that use picture media and classes that use regular learning

Table 4. *Mann-Whitney* test

Asymp.Sig. (2-tailed)	Information
.484	H0 Accepted

Based on Table 4, a significance value of 484 ≥ 0.05 is obtained, so H0 is accepted. So it can be concluded that the average initial mathematical understanding (pretest) ability of experimental class and control class students is the same. Therefore, the research will continue by providing different treatment to the experimental class and the control class.

The next analysis, namely gain index data analysis, is used to find out increasing students' mathematical understanding abilities after treatment both samples used. Table 5 presents the results of descriptive analysis of index data gain.

Table 5. *Descriptive score*

Class	N	Mean	Std. Deviation	Minimum	Maximum
Experiment	14	28.01	0.225	.00	50.00
Control	18	19.26	0.176	.00	44.44

Based on Table 5, the average gain index score for the experimental class is 28.01 which is highly interpreted. Meanwhile, for the control class, the average was 19.26 moderate interpretation. This shows that the average gain of the experimental class greater than the average N control class gain.

Table 6. *Posttest score*

Class	N	Ideal score	Mean	Std. Deviation	Minimum	Maximum
Experiment	14	100	65.71	7.52	55	75
Control	18	100	60.27	8.98	45	75

Based on Table 6, it can be seen that the average posttest score for the experimental class was 65.71, while for the control class the average was 60.27. From the descriptive data, it can be seen that the average score of the experimental class is greater than the average score of the control class with an average difference of 5.44. The results of the posttest data normality test are presented in Table 7.

Table 7. Posttest Normality

Class	Significanse	Information
Experiment	.0.80	Normally distributed
Control	.200*	Normally distributed

From the results of the research data above, it can be understood that learning fraction material using image media and not using image media has a great influence on students' concept understanding. From the data above, learning fraction material using image media is more effective, making students understand, understand and can convey their arguments more quickly than conventional learning (lectures).

CONCLUSION

Based on the results of the research that has been carried out, it is concluded that the use of pictorial media to improve students' understanding of fractions in mathematics learning is better than increasing the mathematical understanding of students who apply ordinary learning. From this we can see that the use of pictorial media to improve students' understanding abilities is very effective in the current era. The use of media in the learning process can also activate communication between teachers and students in teaching and learning activities. The use of media can also make learning more meaningful for students, and what is more important is that using media can provide real experiences that can foster student independence in learning

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