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The Influence of Using Teaching Aids on Student Learning Outcomes in the Learning Process in the Science Study Field

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ABSTRACT

The aim of the research is to examine whether there is an influence of the use of teaching aids on the learning outcomes of students in the field of science study class IV at SDN Limbung Puteri, Bajeng District, Gowa Regency. This research aims to determine the influence of the use of teaching aids in the learning process in the field of science study class IV at SDN Limbung Puteri, Bajeng District, Gowa Regency. This type of research is pre-experimental research in the form of Pretest Posttest Design, namely an experiment which in its implementation only involves one class as an experimental class without a comparison class (control class) which aims to determine the effect of using teaching aids on student learning outcomes in the learning process in the field of study. Class IV Science at SDN Limbung Puteri, Bajeng District, Gowa Regency, 2016/2017 academic year. The experimental units in this research were 28 Class IV students. The research was carried out over 6 meetings. The success of the learning process is viewed from aspects, namely: achieving completeness of students' classical science learning outcomes and student activities in science learning. Learning is said to be successful if the above aspects are fulfilled. The data collection technique used is data on students' science learning outcomes which are collected using learning outcomes tests, data on student activities in science learning are collected using student learning activity observation sheets. The results of descriptive statistical analysis of student learning outcomes regarding positive teaching aids, understanding of material and concepts from science using teaching aids as media show better learning outcomes than before using teaching aids. The results of inferential statistical analysis using the t-test formula, it is known that the calculated t value obtained is 8.32 with a frequency of dk = 28 –1 = 27, at a significance level of 5% obtained t table = 0.381. So, t count > t table or the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted. This proves that the use of teaching aids in science learning has an influence compared to before using teaching aids as learning media.

Keywords: Pre-experiment, props, learning outcomes.

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INTRODUCTION

Education is one form of manifestation of human culture that is dynamic and full of development. Therefore, education must always follow developments in science and technology that develop in society. Education is a very important and determining factor in efforts to organize and develop Indonesian people towards better, more advanced and better quality. All of this is in accordance with the national education objectives stated in Law no. 20 of 2003 which reads:

"Increase devotion to God Almighty, have noble character, be healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens."

To achieve these educational goals we must be based on educational standards. Where, there are eight educational standards, namely process standards, content standards, graduate competency standards, facilities and infrastructure standards, educational facilities standards and educational staff, financing standards, management standards, and assessment standards. . However, the main focus is content standards which cover the scope of material and level of competency. One of the competencies that must be developed in education is creative competency.

In fact, in this increasingly developing era, creative competence is really needed to face the future and the era of globalization and the rapidly developing sophistication of ICT. Likewise, in everyday life, everyone is always faced with various problems that must be solved and require creativity to formulate solutions. To develop students' creativity, one of them is science learning. In this case, it can be found that in the science learning process, students receive implicit and explicit training in how to think creatively in solving problems. In fact, it is clearly stated in the 2004 KBK for Natural Science Education that one of the objectives of science learning to be achieved is to make students have a broader perspective and have an attitude of respect, perseverance, critical attitude, objective, open, innovative and creative, helping students develop reasoning power. , logical thinking, logical systematic, creative, intelligent, sense of beauty, open attitude and curiosity, introspective, independent, cooperative and responsible.Bearing in mind the demands for mastery of material in class IV elementary school semester 2, and so that the learning objectives of Natural Sciences (IPA) can be achieved optimally, in presenting the material, teachers should provide opportunities for students to develop all their potential, build their own knowledge to solve problems and create more learning meaningful. This statement is based on Piaget's opinion (Dahar, 1996: 117) which states that knowledge is built in the child's mind.

In reality in the field, researchers obtained findings regarding students' attitudes towards the Natural Sciences (Science) learning process, students experienced boredom because learning was less interesting, teachers did not provide opportunities for students to actively manipulate objects directly, so that most students had difficulty understanding everything. concepts taught, which ultimately results in student learning achievement being low. The problem that occurs at SDN Limbung Puteri, Bajeng District, Gowa Regency in class IV Semester 1 students is that students do not master the material being taught, this is caused by a lack of mastery of the material being taught. does not provide opportunities for students to actively manipulate objects directly. Thus, student learning activity will not increase.

For this reason, a method is needed that can make students more active in learning. The method used is the method of using teaching aids. This method is a method for measuring children's creativity in grasping the subjects taught by a teacher, apart from that, this method also aims to make students think and have broad insight. In this way, children's creative spirits, especially in science learning, will increase. So learning outcomes will increase.

Based on the description of the problem above, on this occasion the author intends to examine it in a thesis with the title: "The Influence of the use of Teaching Aids on Student Learning Outcomes in the learning process in grade IV science at SDN Limbung Puteri, Bajeng District, Gowa Regency."

METHOD

The type of research used is pre-experimental research or pre-experiment, namely an experimental research design that only uses an experimental group, without a control (comparison) group. The sample of subjects is selected as is without using randomization.

The design used is "One Group Pretest-Posttest Design". With this design model, the results of the treatment can be known more accurately, because it can be compared with the situation before the treatment was given. Where learning is measured before and after giving treatment.

To analyze the data obtained from the research results, simple linear regression analysis, descriptive statistical analysis and inferential statistical analysis will be used. The data collected in the form of pretest scores and posttest scores were then compared. Compare the two scores by asking the question whether there is a difference between the scores obtained between the pretest scores and the posttest scores. Testing for differences in values is only carried out on the average of the two values, and for this purpose a technique called the t-test is used.

RESULT AND DISCUSSION

RESULTS

Description of Pretest Results before Using Teaching Aids on Student Learning Outcomes in the learning process in the field of science study class IV SDN Limbung Puteri, Bajeng District, Gowa Regency

Based on the results of research conducted by researchers at SDN Limbung Puteri, Bajeng District, Gowa Regency, data was obtained which was collected through test instruments so that student learning outcomes in the form of grades from class IV could be known.

Data on learning outcomes for class IV students at SDN Limbung Puteri, Bajeng District, Gowa Regency can be seen as follows:

Table 1. Pretest Value Score

No	Student Name	Mark
1	Afifa Khairun Niswa	50
2	St. Nadira Fairuzia	40
3	St. Nadila Fairuzia	60
4	Muh. Nur Alfiansyah	60
5	Husnul Muflihah	70
6	Siska Arya Ningsih	40
7	Muh. Hafiz	70
8	Muh. Febrian's achievement	60
9	Ainul Burhani	55
10	Dilsa Alani Arman	60
11	Oh yes, Salfitra Mulfa	40
12	Ibrahim	40
13	Hazarika Iffihani R	70
14	Naurah Alkhalisa	60
15	Nayla Fairuzia	60
16	Sri Nabila Aqsa	60
17	Rainy Husna Mannaba	60
18	Rifqah Naila M	60
19	Muh Fadil Maulama	70
20	Syifa Anada Zakaria	60

21	Muh Khalif Dafairzi	40
22	Danas tasya ananda syarman	60
23	Alfatun Nisa	40
24	Muh. Djibril Risyak Cisse	50
25	Washiyatul Akmal	60
26	Nabilah Nur Zaimah Akhsan	70
27	Ahmad Satria Abdillah	60
28	Rasya Islamay Pasha	50

To find the mean (average) pretest score of class IV students at SDN Limbung Puteri, Bajeng District, Gowa Regency, you can see the table below:

Table 2. Calculations to find the mean (average) of the pretest scores

X	F	FX
40	5	200
50	3	150
55	1	55
60	13	780
70	6	420
Amount	**28**	**1605**

From the data above it can be seen that the value of $\sum fx$ = 1605, while the value of N itself is 28. Therefore, the average (mean) value can be obtained as follows:

$$\bar{x} = \frac{1605}{\sum_{i=1}^{28} fx_i} = 57.3_n$$

From the results of the calculations above, the average value obtained from the fourth grade learning outcomes of SDN Limbung Puteri, Bajeng District, Gowa Regency before using the Teaching Aids is 57.3. As for the categories in the Department of Education and Culture (Depdikbud) guidelines, student information can be seen in the following table:

Table 3. Pretest Material Mastery Level

No.	Intervals	Frequency	Percentage (%)	Learning outcome categories
1.	0 – 54	8	28.6%	Very low
2.	55 – 64	14	50%	Low
3.	65 – 79	6	21.4%	Currently
4.	80 – 89	0	0%	Tall
5.	90 – 100	0	0%	Very high
Amount		**28**	**100%**	

Based on the data that can be seen in the table above, it can be concluded that student

learning outcomes at the pretest stage using test instruments are categorized as very low, namely 28.6%, low 50%, medium 21.4%, high 0% and very high at percentage 0%. Looking at the existing percentage results, it can be said that the level of students' ability to understand and master mathematics subject matter before using teaching aids is classified as moderate.

Table 4 Description of the Completeness of Science Learning Outcomes

Score	Categorization	Frequency	Percentage (%)
0 ≤ × < 65	Not finished	22	78.6%
65 ≤ × ≤ 100	Complete	6	21.4%
Amount		**28**	**100%**

If Table 4. is linked to the criteria indicators for the completion of student learning outcomes determined by researchers, namely if the number of students who reach or exceed the KKM score (65) ≥ 75%, it can be concluded that the science learning outcomes for class IV SDN Limbung Puteri, Bajeng District, Gowa Regency have not met. The criteria for completeness are classical learning outcomes where only 21.4% of students complete ≤ 75%. Description of Learning Outcomes (posttest) after Using Teaching Aids on Student Learning Outcomes in the learning process in the field of science study Class IV SDN Limbung Puteri, Bajeng District, Gowa Regency

During the research, changes occurred in the class after being given treatment. These changes are in the form of learning outcomes whose data is obtained after being given a posttest. These changes can be seen from the data on the results of class IV science learning at SDN Limbung Puteri, Bajeng District, Gowa Regency after using the Teaching Aids:

Table 5. Posttest Value Score

No	Student Name	Mark
1	Afifa Khairun Niswa	90
2	St. Nadira Fairuzia	100
3	St. Nadila Fairuzia	80
4	Muh. Nur Alfiansyah	90
5	Husnul Muflihah	90
6	Siska Arya Ningsih	100
7	Muh. Hafiz	75
8	Muh. Febrian's achievement	90
9	Ainul Burhani	90
10	Dilsa Alani Arman	60
11	Oh yes, Salfitra Mulfa	80
12	Ibrahim	90
13	Hazarika Iffihani R	70
14	Naurah Alkhalisa	90
15	Nayla Fairuzia	85
16	Sri Nabila Aqsa	85
17	Rainy Husna Mannaba	100
18	Rifqah Naila M	80

19	Muh Fadil Maulama	75
20	Syifa Anada Zakaria	80
21	Muh Khalif Dafairzi	85
22	Danas tasya ananda syarman	85
23	Alfatun Nisa	80
24	Muh. Djibril Risyak Cisse	80
25	Washiyatul Akmal	85
26	Nabilah Nur Zaimah Akhsan	85
27	Ahmad Satria Abdillah	60
28	Rasya Islamay Pasha	75

To find the mean (average) posttest score from class IV of SDN Limbung Puteri, Bajeng District, Gowa Regency.

Table 6. Calculations to find the mean (average) posttest score

X	F	FX
60	2	120
70	1	70
75	3	225
80	6	480
85	6	510
90	7	630
100	3	300
Amount	**28**	**2335**

From the post-test results data above, it can be seen that the value of $\sum fx$ = 2335 and the value of N itself is 28. Then the average value (mean) can be obtained as follows:

$$\bar{x} =$$

$$= \frac{2335}{\sum_{i}^{k} 28 f x_i}$$

$$= 83.4 n$$

From the results of the calculations above, the average score obtained for the learning outcomes of class IV students at SDN Limbung Puteri, Bajeng District, Gowa Regency after using the Teaching Aids is 83.4 from the ideal score of 100.

As for categorization in the Department of Education and Culture (Depdikbud) guidelines, student information can be seen in the following table:

Table 7. Post-test Material Mastery Level

No.	Intervals	Frequency	Percentage (%)	Learning outcome categories
1.	0 – 54	0	0%	Very low
2.	55 – 64	2	7.14%	Low
3.	65 – 79	4	14.3%	Currently
4.	80 – 89	12	42.85%	Tall
5.	90 – 100	10	35.71%	Very high
Amount		**28**	**100%**	

Based on the data that can be seen in the table above, it can be concluded that the learning outcomes at the posttest stage using the test instrument are categorized as very high, namely 35.71%, high 42.85%, medium 14.3%, low 7.14%, and very low at a percentage of 0%. Looking at the existing percentage results, it can be said that the level of students' ability to understand and master science subject matter after using teaching aids is relatively high.

Table 8. Description of the Completeness of Science Learning Outcomes

Score	Categorization	Frequency	Percentage (%)
0 ≤ × < 65	Not finished	2	7.17%
65 ≤ × ≤ 100	Complete	26	92.85%
Amount		28	100%

If Table 8 is linked to the criteria indicators for the completion of student learning outcomes determined by researchers, namely if the number of students who reach or exceed the KKM score (65) ≥ 75%, it can be concluded that the Class IV science learning outcomes of SDN Limbung Puteri, Bajeng District, Gowa Regency have met The criteria for completeness are classical learning outcomes where students who complete are 92.85% ≥ 75%.

Description of Learning Activities while Using Teaching Aids on Student Learning Outcomes in the learning process in the field of study Science Class IV SDN Limbung Puteri Bajeng District, Gowa Regency The results of observations of student activities in participating in learning using teaching aids during 3 meetings are expressed in percentages as follows:

Table 9. Results of Analysis of Student Activity Observation Data

No.	Student Activities	Number of Active Students at the 2nd Meeting								Average	%	Original category
		1	2	3	4	5	6	7	8			
1.	Students present When learning		28	28	28	28	28	28		28	100	**Active**
2.	Students who participate in his group		16	17	17	18	16	18		17	60.71	**Active**
3.	The student who connect that knowledge	*PR*	15	19	17	16	15	17		16.5	58.92	**Active**

	he has.	*E T E S T*									
4.	Enthusiastic students predict titles		15	16	16	18	15	17	16.15	67.70	**Active**
5.	Active students follow guidance Teacher		20	17	14	17	13	16	16,16	80.95	**Active**
6.	Active student predict the answer		14	12	17	18	17	16	13,16	73.83	**Active**
7	Active students make summaries short reading		16	15	17	17	14	17	17,16	77.38	**Active**
8	The student who presenting learning experience which has been passed		13	14	16	18	17	16	15.83	72.61	**Active**
9	The student who do results frequent and discussion		14	12	11	16	16	17	14.33	63.09	**Active**
10	Students who actively look for main ideas		15	18	16	16	17	16	13.66	67.70	**Active**
11	Active Students recognize mistakes and interesting conclusion		15	17	16	19	17	18	17	79.76	**Active**
	Average										**Active**

The Effect of Using Teaching Aids on Student Learning Outcomes in the learning process in the field of science study class IV at SDN Limbung Puteri, Bajeng District, Gowa Regency

In accordance with the research hypothesis, namely "the use of teaching aids has an influence on grade IV science learning outcomes at SDN Limbung Puteri, Bajeng District, Gowa Regency", the technique used to test this hypothesis is inferential statistical techniques using the t-test.

Table 10. Analysis of Pretest and Posttest scores

No.	X1 (Pretest)	X2 (Posttest)	d = X2 - X1	d^2
1.	50	90	40	1600
2.	40	100	60	3600
3.	60	80	20	400
4.	60	90	30	900
5.	70	90	20	400
6.	40	100	60	3600
7.	70	75	5	25

8.	60	90	30	900
9.	55	90	35	1225
10.	60	60	0	0
11.	40	80	40	1600
12.	40	90	50	2500
13.	70	70	0	0
14.	60	90	30	900
15.	60	85	25	625
16.	60	85	25	625
17.	60	100	40	1600
18.	60	80	20	400
19.	70	75	5	25
20.	60	80	20	400
21.	40	85	15	225
22.	60	85	15	225
23.	40	80	40	1600
24.	50	80	30	900

The steps in hypothesis testing are as follows:

1. Find the price "Md" using the formula:

$$Md = \frac{\sum d}{N}$$

$$= \frac{720}{28}$$

$$= 25.71$$

2. Look for the price "$\sum X^2 d$" using the formula:

$$\sum X^2 d = \sum d^2 - \frac{\sum d^2}{N}$$

$$= 25750 - \frac{720^2}{28}$$

$$= 25750 - \frac{518400}{28}$$

$$= 25750 - 18514.28$$

$$= 7235.72$$

3. Determine the price t Calculate

$$t = \frac{Md}{\sqrt{\frac{\sum X^2 d}{N\,N-1}}}$$

$$t = \frac{25,71}{\frac{7235,72}{28\ 28-1}}$$

$$t = \frac{25,71}{\frac{7235,72}{28(27)}}$$

$$t = \frac{25,71}{\frac{7235,72}{756}}$$

$$t = \frac{25,71}{\sqrt{9,57}}$$

$$t = \frac{25,71}{3,09}$$

$$t = 8.32$$

4. Determineprice t Table

To find the t table, researchers use a t distribution table with a significance level α = 0.05 and $dk = N - 1 = 28 - 1 = 27$ then we get t 0.05 = 0.381. After obtaining t Count = 8.32 and t Table = 0.381 then we get t Count > t_{Table} or 8.32 > 0.381. So it can be concluded that H0 is rejected and Ha is accepted, so it is found that the use of teaching aids influences student learning outcomes.

DISCUSSION

Props are media that help students' real experiences. So that students can broaden their horizons and experiences that reflect nonverbalistic learning and make appropriate generalizations. Teaching aids bring freshness and variety to students' learning experiences and make learning outcomes more meaningful for a variety of abilities. With teaching aids, students will be more active in learning. In implementation,

The teacher's teaching style is adjusted to the student's learning style, for example learning while playing so that students can absorb lesson material according to their respective learning styles and students' absorption of the lesson material can be achieved optimally.Based on the pretest results, the average value of student learning outcomes was 57.3 with categories namely very low, namely 26.6%, low 50%, medium 21.4%, high 0% and very high at a percentage of 0%. Looking at the existing percentage results, it can be said that the level of students' ability to understand and master mathematics subject matter before using teaching aids is relatively low.

Furthermore, the average value of the posttest results was 83.4. So the results of learning science after using teaching aids have better learning outcomes than before using teaching aids. Apart from that, the percentage of students' science learning outcomes category also increased, namely very high, namely 35.71%, high 42.85%, medium 14.3%, low 7.14%, and very lowat a percentage of 0%.

Based on the results of inferential statistical analysis using the t-test formula, it can be seen that the calculated t value is 8.37. With a frequency (dk) of 28 - 1 = 27, at a significance level of 5%, t table = 0.381. Because t count > t table at a significance level of 0.05, the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, which means that

the use of teaching aids influences science learning outcomes.

The results of the analysis above show that there is an influence of the use of teaching aids on science learning outcomes, in line with the results of observations made. Based on the results of observations, there were changes in the students where at the beginning of the learning activity there were several students who were doing other activities or acting indifferent during the learning process. This can be seen at the first meeting as many as 3 students did other activities, while at the last meeting only 2 students did other activities when the teacher explained the material. At the beginning of the meeting, only a few students were active during the lesson. However, in line with the use of visual aids, students began to be active at each meeting.Observation results showed that there were a large number of students who answered when asked questions and students who volunteered to work on questions on the blackboard. Students also begin to be active and confident in responding to answers from other students so that other students are also motivated to follow the lesson. A fun learning process means that students no longer come in and out during learning.Based on the results of descriptive statistical analysis and inferential statistics obtained as well as the results of observations that have been made, it can be concluded that the use of teaching aids has an influence on student learning outcomes in the learning process in the field of science study class IV at SDN Limbung Puteri, Bajeng District, Gowa Regency.

CONCLUSION

More detailed conclusions regarding the implementation of science learning using teaching aids in class IV of SDN Limbung Puteri, Bajeng District, Gowa Regency are as follows:

1. Based on the data obtained, it can be concluded that in general the science learning outcomes of class IV students at SDN Limbung Puteri, Bajeng District, Gowa Regency before using teaching aids are categorized as low. This is shown by the percentage of student learning outcomes, namely very low, namely 28.6%, low 50%, medium 21.4%, high 0% and very high at a percentage of 0%.
2. Based on the data obtained, it can be concluded that in general, teaching aids have an influence on science learning outcomes using teaching aids in class IV of SDN Limbung Puteri, Bajeng District, Gowa Regency, which can be seen from the percentage gains, namely very high 35.71%, high 42.85%, medium 14.3%, low 7.14%, and very low at a percentage of 0%..
3. Based on the hypothesis testing that has been carried out, it can be concluded that the use of teaching aids has an influence on science learning outcomes using teaching aids in class IV at SDN Limbung Puteri District.

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