

CHAPTER IV

RESEARCH AND DISCUSSION OF RESEARCH

This chapter discussed about the statistical result of the study that contains presentation of data, hypothesis testing, and discussion.

A. Presentation of Data

In this research, the researcher uses two instrument to collect the data, namely test and documentation.

1. The Result of Data

To know the effect of origami as media on students' vocabulary mastery, the researcher needs the student's score on vocabulary as data by using test. The researcher gives pretest and posttest to the sample to do a research, exactly students at the fourth grade of SD ADINDA Surabaya. Pretest is conducted before applying a treatment to know the students ability about vocabulary while, posttest is conducted after origami as media is applied as a treatment on students' vocabulary mastery. So, the reseracher can measure the significant difference between pretest and posttest. The researcher got the pretest data as presented in the table below :

4.1 The Result of Pretest the Student's :

No	Student's name	Pretest Score
1	AK	80
2	ADP	90
3	ADS	80
4	ILP	40
5	JAM	20
6	MO	90
7	MKPN	40
8	MHAN	80
9	MIKS	40
10	MSA	40
11	MWS	50
12	NSH	70
13	RAM	100
14	SOS	30
15	JA	30

SUM	880
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After the treatment had been conducted, the researcher gave the posttest data as follow :

4.2 The Result of Posttest the Student's:

No	Student's name	Posttest Score
1	AK	70
2	ADP	80
3	ADS	100
4	ILP	60
5	JAM	40
6	MO	100
7	MKPN	80
8	MHAN	90
9	MIKS	70
10	MSA	90
11	MWS	90
12	NSH	70

13	RAM	100
14	SOS	50
15	JA	20
SUM		1110

a. Validity of Data

In this research, the researcher used content validity. Content validity means that the material that has a relationship with the material presented by the teacher at the school. And before giving the test, the researcher observed the students phenomena and search some references to assess the test. Moreover, the researcher showed to the teacher exactly the teacher at the fourth grade to know the whether of the test that will be given matches with the vocabulary learning. Therefore, the instrument of this research is valid.

b. Reliability of Data

To know the reliability of the test, the researcher used Kuder-Richardson (K-R.21) formula. The fomula is :

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{M(k-M)}{kV_t} \right)$$

14	0	1	0	0	0	0	1	0	0	1	3	9
15	0	1	0	1	1	0	0	0	0	0	3	9
Np	7	13	9	9	11	11	10	8	6	4	88	614

To know the reliability the researcher had to compute total variance (V_t) :

$$\begin{aligned}
 V_t &= \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N} \\
 &= \frac{614 - \frac{(88)^2}{15}}{15} \\
 &= \frac{614 - \frac{7744}{15}}{15} \\
 &= \frac{614 - 516,26666667}{15} = \frac{97,73333333}{15} = 6,5155555553
 \end{aligned}$$

And then the researcher calculated mean of total score (M) :

$$\begin{aligned}
 M &= \frac{\sum x}{N} \\
 &= \frac{88}{15} = 5,8666666667
 \end{aligned}$$

After that the researcher calculated the reliability using the Kuder-Richardson (K-21) formula :

$$\begin{aligned}
 r_{11} &= \left(\frac{k}{k-1} \right) \left(1 - \frac{M(k-M)}{kV_t} \right) \\
 &= \left(\frac{10}{10-1} \right) \left(1 - \frac{5,8666666667(10-5,8666666667)}{10,6,5155555553} \right)
 \end{aligned}$$

$$= \left(\frac{10}{9}\right) \left(1 - \frac{5,866666667(4,133333333)}{65,15555553}\right)$$

$$= \left(\frac{10}{9}\right) \left(1 - \frac{24,24888889}{65,15555553}\right)$$

$$= \left(\frac{10}{9}\right) (1 - 0,3721691678)$$

$$= (1,111111111) (0,6278308322)$$

$$= 0.6975898135$$

$$df = N - 1$$

$$= 15 - 1$$

$$= 14$$

From the computation above, it is found that total reliability of pretest is 0.6975898135. The critical value for r_{table} of product moment in pendidikan is 5%. Because the degree of freedom (df) of this research is 14, so the degree of significance is 0,497 . therefore, the r_{11} is higher than r_{table} . It means the all of the items of question on pretest is reliable.

2. Reliability of Posttest Computation

4.4 Posttest Score of Vocabulary

NO	Item Number										X	X ²
	1	2	3	4	5	6	7	8	9	10		
1	1	1	1	1	1	1	1	0	0	0	7	49
2	1	1	1	1	1	1	1	0	1	0	8	64
3	1	1	1	1	1	1	1	1	1	1	10	100
4	0	0	0	1	1	1	1	0	1	1	6	36
5	0	1	0	0	0	1	1	1	0	0	4	16
6	1	1	1	1	1	1	1	1	1	1	10	100
7	1	1	1	1	1	1	1	1	0	0	8	64
8	1	1	1	1	1	1	1	1	1	0	9	81
9	0	0	1	1	1	1	1	1	1	0	7	49
10	0	1	1	1	1	1	1	1	1	1	9	81
11	0	1	1	1	1	1	1	1	1	1	9	81
12	0	1	1	1	1	1	0	1	1	0	7	49

13	1	1	1	1	1	1	1	1	1	1	10	100
14	0	1	0	0	0	1	1	1	0	1	5	25
15	0	1	0	1	0	0	0	0	0	0	2	4
Np	7	13	11	13	12	14	13	11	10	7	111	899

To know the reliability the researcher had to compute total variance (V_t) :

$$\begin{aligned}
 V_t &= \frac{\sum x^2 - \frac{(\sum x)^2}{N}}{N} \\
 &= \frac{899 - \frac{(111)^2}{15}}{15} \\
 &= \frac{899 - \frac{12.321}{15}}{15} \\
 &= \frac{899 - 821,4}{15} = \frac{77,6}{15} = 5,173333333
 \end{aligned}$$

And then the researcher calculated mean of total score (M) :

$$\begin{aligned}
 M &= \frac{\sum x}{N} \\
 &= \frac{111}{15} = 7,4
 \end{aligned}$$

After that the researcher calculated the reliability using the Kuder-Richardson (K-21) formula :

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{M(k-M)}{kV_t} \right)$$

$$\begin{aligned}
&= \left(\frac{10}{10-1}\right) \left(1 - \frac{7,4(10-7,4)}{10,5,1733333333}\right) \\
&= \left(\frac{10}{9}\right) \left(1 - \frac{7,4(2,6)}{51,7333333333}\right) \\
&= \left(\frac{10}{9}\right) \left(1 - \frac{19,24}{51,7333333333}\right) \\
&= \left(\frac{10}{9}\right) (1 - 0,3719072165) \\
&= (1,1111111111) (0,6280927835) \\
&= 0.6978808705
\end{aligned}$$

$$df = N - 1$$

$$= 15 - 1$$

$$= 14$$

From the computation above, it is found that total reliability of posttest is 0.6978808705. The critical value for r_{table} of product moment in pendidikan is 5%. Because the degree of freedom (df) of this research is 14, so the degree of significance is 0,497 . therefore, the r_{value} is higher than r_{table} . It means the all of the items of question on posttest is reliable.

c. Data Analysis

To analyze the data, the researcher in this research used t-test formula.

The formula is :

4.5 Difference Score of Pretest and Posttest Value

NO	Pretest	Posttest	(D) = Pretest – Posttest	D²
1	80	70	-10	100
2	90	80	10	100
3	80	100	-20	400
4	40	60	-20	400
5	20	40	-20	400
6	90	100	-10	100
7	40	80	-40	1600
8	80	90	-10	100
9	40	70	-30	900
10	40	90	-50	2500
11	50	90	-40	1600
12	70	70	0	0
13	100	100	0	0
14	30	50	-20	400
15	30	20	10	100

N =	$\Sigma X =$	$\Sigma X =$	$\Sigma d =$	$\Sigma d^2 =$
15	880	1110	-250	8700

Based on the table above, the computation of dependent t-test as follows :

$$N = 15$$

$$\Sigma D = -250$$

$$\Sigma D^2 = 8700$$

The steps to counting t-test are as follows :

- Looking for D (difference) between score pretest and posttest. The calculation is $D = X - Y$. See the table
- Summing D (difference) $\Sigma D = -250$
- Looking for mean of difference :

$$M_D = \frac{\Sigma D}{N}$$

$$M_D = \frac{-250}{15}$$

$$= -16,66666667$$

- Square all of D score. And then, add all of square D score.
- Determining standard deviation from D :

$$SD_D = \sqrt{\frac{\Sigma D^2}{N} - \left(\frac{\Sigma D}{N}\right)^2}$$

$$= \sqrt{\frac{8700}{15} - \left(\frac{-250}{15}\right)^2}$$

$$= \sqrt{\frac{8700}{15} - (-16,66666667)^2}$$

$$\begin{aligned}
&= \sqrt{\frac{8700}{15} - 277,77777789} \\
&= \sqrt{580 - 277,77777789} \\
&= \sqrt{302,22222211} \\
&= 17,384539744
\end{aligned}$$

f. Determining standard error of mean of D :

$$\begin{aligned}
SE_{MD} &= \frac{SD_D}{\sqrt{N-1}} \\
&= \frac{17,384539744}{\sqrt{15-1}} \\
&= \frac{17,384539744}{\sqrt{14}} \\
&= \frac{17,384539744}{3,7416573868} \\
&= 4,646213682
\end{aligned}$$

g. After that the researcher can determining t_0 :

$$\begin{aligned}
t_0 &= \frac{M_D}{SEM_D} \\
&= \frac{-16,66666667}{4,646213682} \\
&= -3,587150271 \\
&= -3,590
\end{aligned}$$

Based on the computation of dependent t-test, $t_0 = 3,590$. To know whether null hypothesis is rejected or accepted, it must be done the process of hypothesis testing.

Note : Sign (-) does not mean a minus or algebraic sign, but (-) reads “ there is a difference of 3,590 degrees between pretest and posttest.

B. Hypothesis Testing

Based on the computation of $t_o = 3,590$. To know whether H_0 is rejected or accepted, it must be consulted with t-value in the t-table by using significant level. Significant level t-table to education is 5%. The researcher should know degree of freedom (df). The formula of df :

$$\begin{aligned} df &= N - 1 \\ &= 15 - 1 \\ &= 14 \end{aligned}$$

Based on the computation above, obviously $df = 14$, t-value that can be obtained in t-table in the level significant 5% = 2,14

After that, the researcher compare the score of t-value (t_o) with t-table (t_t). $t_o = 3,590$ while $t_t = 2,14$. So $t_o > t_t$ ($3,590 > 2,14$)

Finally, based on data above the researcher stated that alternative hypothesis (H_a) is accepted and null hypothesis (H_o) is rejected. In this research the researcher conclude that there is effect using Origami as media on students' vocabulary mastery exactly at the fourth grade of SD ADINDA SURABAYA.

C. Discussion

In this section, the researcher explain the discussion of the result of study based on research problem that have related with the title the effect of using origami as media on students' vocabulary mastery at the fourth grade of SD

ADINDA SURABAYA. To know that, the researcher formulated the research problem of study to be discussed, as follows :

1. Is there any effect of using origami as media on students' vocabulary mastery at the fourth grade of SD ADINDA SURABAYA?

Based on t-test computation, the result of t_o or t_{value} is 3,590. To know is there any effect, the researcher had to compare t_{table} and t_{value} . To known t_{table} the researcher had determined the degree of freedom (df). The formula is :

$$\begin{aligned} df &= N - 1 \\ &= 15 - 1 \\ &= 14 \end{aligned}$$

The number cases (N) of this this research is 15. To know the value of t_{table} (t_t) the researcher see the table in Suharsimi's book.

4.6 Critical Value of T-Test

df / db	Critical Value t-test on Significance Level	T_{table} (t_t)	T_{value} (t_o)
14	5%	2,14	3,590

Thus, the t_{table} or (the critical value of t-test) with $df = 14$ on 5% significance level is 2,14. It means t_{value} (t_o) is higher than t_{table} (t_t). $t_o > t_t$ 3.590 > 2,14.

From the discussion above, it can be concluded that alternative hypothesis (Ha) is accepted of this research. Or it can state that there is effect of using origami as media on students' vocabulary mastery at the fourth grade of SD ADINDA SURABAYA.

The conclusion of this research is suitable with the theory that has been stated in the previous chapter, such as media can use by the teacher to arrive their material to the students to help simplify and perfect the process of learning language, to make the learning process more interesting and interactive.¹ In this research, the researcher using origami as media. Origami it can be called instructional media.² Instructional media is device and material employed in teaching and learning. Teaching vocabulary using origami can make the students practice concentration and memory, develop fantasy, imagination and creations, children learn to imitate or follow direction, and children learn to work.³ Based on research that has been done by researcher, teaching vocabulary by using media as like origami, the students remember the new vocabulary and the students attract to making origami in another shape. The students also really enjoy making shape from origami paper. Using origami as media on students' vocabulary mastery very effective in teaching learning program.

¹ Suyanto, *English for Young Learners*, 101.

² Cintiyawati, Ikhsanudin, and Sofian, "DESIGNING ORIGAMI TASKS FOR TEACHING PROCEDURE TEXT," 3.

³ Khoiriyati and Maharintan, "UPAYA MENINGKATKAN KREATIFITAS ANAK MENGGUNAKAN MEDIA KERTAS ORIGAMI."

2. How is statistically significant the effect of using origami as media on students' vocabulary mastery at the fourth grade of SD ADINDA SURABAYA?

In previous section, the researcher has analyzed the data using t-test to get the t_{value} of this research. The result of calculation t_o or t_{value} is 3,590. It means that the effectiveness of using origami as media in teaching vocabulary is 3,590.

To know the statistically significance the effect of using origami as media on students' vocabulary mastery, the researcher had to compare the t_{value} and t_{table} . The t_{table} can be know when the researcher had determined the degree of freedom (df). Because the number of cases (N) of this research is 15, so the degree of freedom (df) ($df = N - 1$) is 14. The degree of freedom (df) 14 on 5% significance level is 2,14. It means $t_{\text{value}} > t_{\text{table}}$. So there is effect of using origami as media on students' vocabulary mastery at the fourth grade of SD ADINDA SURABAYA with the significance correctness 95%. It shows the forth grade students of SD ADINDA SURABAYA taught by using origami as media has effective learning. Based on data above, origami as media is certainly effective for students' vocabulary mastery. The students who are taught with using origami as media are more interested, active and they have many imagination in their mind. Moreover, it makes students do not feel bored to follow the teaching learning process. And the student always want to know the other shape that can make with origami paper.

