CHAPTER IV
RESEARCH FINDINGS AND ANALYSIS

A. Description of the Result Research

To find out the effectiveness of word find puzzle between the students who were taught by using word find puzzle and the students who were not taught by using word find puzzle on common noun, especially in SDN 03 Tengengwetan Siwalan Kab. Pekalongan the writer did an analysis of quantitative data. The data was obtained by giving test to the experimental class and control class after giving a different learning both classes.

The subjects of this research were divided into two classes. They are experimental class (V B) and control class (V A) of SDN 03 Tengenwetan. Before the activities were conducted, the writer determined the materials and lesson plan of learning. Learning in the experiment class used word find puzzle, while the control class without used word find puzzle.

After the data were collected, the writer analyzed it. The first analysis data is from the beginning of control class and experimental class that is taken from the pre test value. It is the normality test and homogeneity test. It is used to know that two groups are normal and have same variant. Another analysis data is from the ending of control class and experimental class. It is used to prove the truth of hypothesis that has been planned.

B. The Data Analysis and Test of Hypothesis

1. The Data Analysis

a. The Data Analysis of Pre-Test Value of the Experimental class and the Control Class.

Table 1

The list of Pre-Test Value of

The Experimental and Control Classes

No	Code	Experiment	Code	Control
1	E-01	52	C-01	40
2	E-02	64	C-02	52
3	E-03	60	C-03	52
4	E-04	48	C-04	48
5	E-05	48	C-05	68
6	E-06	40	C-06	52
7	E-07	40	C-07	48
8	E-08	68	C-08	52
9	E-09	68	C-09	64
10	E-10	56	C-10	68
11	E-11	68	C-11	48
12	E-12	52	C-12	44
13	E-13	48	C-13	60
14	E-14	64	C-14	60
15	E-15	48	C-15	56
16	E-16	56	C-16	56
17	E-17	64	C-17	60
18	E-18	44	C-18	48
19	E-19	60	C-19	40
20	E-20	44	C-20	40
	Σ	1092		1056
	χ	54.60		52.80
	n	20		20
	S^2	85.378		75.117
	S	9.472		8.667

1) The Normality Pre-test of the Experimental Class

The normality test is used to know whether the data obtained is normally distributed or not. Based on the table above, the normality test:

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Length of the class = 4.666 ~ 5

Maximum score = 68

Minimum score = 40

K / Number of class = 5.29 ~ 6

Range = 28

Table 2

Distribution value of pre test of experiment class

Class interval	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
40 – 44	4	42	1764	168	7056
45 – 49	4	47	2209	188	8836
50 – 54	2	52	2704	104	5408
55 – 59	2	57	3249	114	6498
60 – 64	5	62	3844	310	19220
65 – 69	3	67	4489	201	13467
Total	20			1085	60485

$$\overline{X} = \frac{\sum fixi}{\sum fi} = \frac{1085}{20} = 54.25$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{20 * 60485 - (1085)^2}{20(59-1)}$$

$s^2 = 85.461$

$s = 9, 244$

Table 3

Observation frequency value of pre test

Of experiment class

Class interval	Bk	Zi	P(Zi)	size class	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	39.5	-1.60	0.4452				
40-44				0.0921	1.842	4	2.528211
	44.5	-1.05	0.3531				
45-49				0.1581	3.162	4	0.222089
	49.5	-0.51	0.195				
50-54				0.183	3.66	2	0.752896
	54.5	0.03	0.012				
55-59				0.2037	4.074	2	1.055836
	59.5	0.57	0.2157				
60-6				0.1508	3.016	5	1.305125
	64.5	1.11	0.3665				
65-69				0.084	1.68	3	1.037143
	69.5	1.65	0.4505				
							6.901299
X tabel	7.815						

With α = 5% and dk = 6-3 = 3, from the chi-square distribution table, obtained X_{table} = 7.815. Because X^2_{count} is lower than X^2_{table} (6.901 < 7.815). So, the distribution list is normal.

2) The Normality Pre-Test of the Control Class

Hypothesis :

Ho: The distribution list is normal.

Ha: The distribution list is not normal.

Test of hypothesis:

The formula is used:

: $\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$

The computation of normality test:

Maximum score = 68

Minimum score = 40

Range = 28

K/ Number of class = 5.29 ~ 6

Length of the class = 4.666 ~ 5

Table 4

Distribution value of pre test of control class

Class interval	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
40 – 44	4	42	1764	168	7056
45 – 49	4	47	2209	188	8836
50 – 54	4	52	2704	208	10816
55 – 59	2	57	3249	114	6498
60 – 64	4	62	3844	248	15376
65 – 69	2	67	4489	134	8978
Total	20			1060	57560

$$\frac{\sum fixi}{\sum fi} = \frac{1060}{20} = 53.00$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{20*57560 - (1060)^2}{20(20-1)}$$

$s^2 = 72.631$

$s = 8.522$

Table 5

Observation frequency value of pre test

Of control class

class interval	Bk	Zi	P(Zi)	size class	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	39.5	-1.58	0.4429				

40-44				0.1016	2.032	4	1.906015748
	44.5	-1.00	0.3413				
45-49				0.1822	3.644	4	0.034779363
	49.5	-0.41	0.1591				
50-54				0.0877	1.754	4	2.876006842
	54.5	0.18	0.0714				
55-59				0.205	4.1	2	1.075609756
	59.5	0.76	0.2764				
60-64				0.1351	2.702	4	0.6235396
	64.5	1.35	0.4115				
65-69				0.0623	1.246	2	0.456272873
	69.5	1.94	0.4738				
							6.972224182

X tabel 7.815

With α = 5% and dk = 6-3 = 3, from the chi-square distribution table, obtained X_{table} = 7.815. Because X^2_{count} is lower than X^2_{table} (6.9722 < 7.815). So, the distribution list is normal.

3) The Homogeneity Pre-Test of the Experimental Class

Hypothesis :

$H_o : \sigma_1^2 = \sigma_2^2$

$H_A : \sigma_1^2 \neq \sigma_2^2$

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ variant}{smallest\ variant}$$

The Data of the research:

Variant	Experimental	Control
Total	1092	1056
N	20	20
$\overline{X}$	54.60	52.80
Variant (S^2)	85.378	75.117
Standard deviasi (S)	9.472	8.667

Based on the formula, it is obtained:

$$F = \frac{85.378}{75.117} = \quad 1,\ 137$$

With α = 5% and dk = (20-1 = 19): (20-1 = 19), obtained F_{table} = 2.15. Because F_{count} is lower than F_{table} (1,137 < 2.15). So, Ho is accepted and the two groups have same variant / **homogeneous.**

4) The average of similarity Test of Pre-Test of Experimental and Control Classes.

Hypothesis:

Ho: $\mu_1 = \mu_2$

Ha: $\mu_1 \neq \mu_2$

Test of hypothesis:

Based on the computation of the homogeneity test, the experimental class and control class have same variant. So, the t-test formula:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad \boxed{S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}}$$

The data of the research:

Variant	Experiment	Control
Jumlah	1092	1056
n	20	20
$\overline{X}$	54.60	52.80
Variant (S^2)	85.378	75.117
Standard deviasi (S)	9.472	8.667

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

$$S = \sqrt{\frac{(20-1)85.378 + (20-1)75.117}{20 + 20 - 2}} = 9.078$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{54.60 - 52.80}{9.078\sqrt{\frac{1}{20} + \frac{1}{20}}} = 0.627$$

With α = 5% and dk = 20 + 20 – 2 = 38, obtained t_{table} = 2.02 (two tails). Because t_{count} is lower than t_{table} (0.627 < 2.02). So, Ho is accepted and there is no difference of the pre test average value from both groups.

b. The Data Analysis of Post-Test Value in Experimental Class and Control Class.

Table 6

The List of the Post Test Value of the Experimental And Control Classes

No	Code	Experiment	Code	Control
1	E-01	84	C-01	72
2	E-02	76	C-02	60
3	E-03	68	C-03	56
4	E-04	76	C-04	44
5	E-05	76	C-05	56
6	E-06	60	C-06	68
7	E-07	84	C-07	56
8	E-08	72	C-08	72
9	E-09	76	C-09	68
10	E-10	60	C-10	52
11	E-11	84	C-11	68
12	E-12	64	C-12	68
13	E-13	68	C-13	64
14	E-14	60	C-14	44
15	E-15	84	C-15	60
16	E-16	72	C-16	52
17	E-17	88	C-17	68
18	E-18	68	C-18	52
19	E-19	76	C-19	60

20	E-20	84	C-20	48
	Σ	1480		1188
	χ	74.00		59.40
	n	20		20
	S^2	79.995		79.62
	S	8.944		8.923

1) The Normality Post-Test of the Experimental Class

Based on the table above, the normality test:

Hypothesis :

Ho : The distribution list is normal.

Ha : The distribution list is not normal.

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score = 88

Minimum score = 60

Length of the class = 4.66 ~ 5

Range = 28

K/ Number of class = 5.29 ~ 6

Table 7

Distribution value Post Test of the Experimental Class

Kelas	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
60 – 64	4	62	3844	248	15376
65 – 69	3	67	4489	201	13467
70 – 74	2	72	5184	144	10368
75 – 79	5	77	5929	385	29645
80 – 84	5	82	6724	410	33620
85 – 89	1	87	7569	87	7569
Jumlah	20		33739	1475	110045

$$\overline{X} = \frac{\sum fixi}{\sum fi} = \frac{1475}{20} = 73.75$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{20*110045 - (1475)^2}{20(20-1)}$$

$s^2 = 66.51$
$s = 8.15$

Table 8

Observation frequency value of post test

Of experiment class

class interval	Bk	Zi	P(Zi)	size class	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	59.5	-1.75	0.4599				
60-64				0.0891	1.782	4	2.76067565
	64.5	-1.13	0.3708				
65-69				0.1723	3.446	3	0.05772374
	69.5	-0.52	0.1985				
70-74				0.1626	3.252	2	0.4820123
	74.5	0.09	0.0359				
75-79				0.2253	4.506	5	0.05415801
	79.5	0.71	0.2612				
80-84				0.1454	2.908	5	1.50497387
	84.5	1.32	0.4066				
85-89				0.0666	1.332	1	0.08275075
	89.5	1.93	0.4732				
							4.94229431

X tabel 7.815

With α = 5% and dk = 6-3 = 3, from the chi-square distribution table, obtained X_{table} = 7.815. Because X^2_{count} is lower than X^2_{table} (4.942 < 7.815). So, the distribution list is normal.

2) The Normality Post-Test of the Control Class

Hypothesis: Ho : The distribution list is normal

Ha : The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

Maximum score = 72

Minimum score = 44

Range = 28

K/many class interval = 5.29 ~ 6

Length of the class = 4.66 ~ 5

Table 9

Distribution value of post test of control class

Class Interval	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
44 – 48	3	46	2116	138	6348
49 – 53	3	51	2601	153	7803
54 – 58	3	56	3136	168	9408
59 – 63	3	61	3721	183	11163
64 – 68	6	66	4356	396	26136
69 – 73	2	71	5041	142	10082
Total	20			1180	70940

$$\overline{X} = \frac{\sum fixi}{\sum fi} = \frac{1180}{20} = 59.00$$

$$s^2 = \frac{n\sum fi.xi^2 - (\sum fixi)^2}{n(n-1)} = \frac{20 * 70940 - (1180)^2}{20(20-1)}$$

$s^2 = 69.47$

s = 8.33

Table 10

Observation frequency value of post test
Of control class

class interval	Bk	Zi	P(Zi)	size class	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	43.5	-1.86	0.4686				
44-48				0.0724	1.448	3	1.66347
	48.5	-1.26	0.3962				
49-53				0.1508	3.016	3	8.488063
	53.5	-0.66	0.2454				
54-58				0.2215	4.43	3	0.461603
	58.5	-0.06	0.0239				
59-63				0.1815	3.63	3	0.109339
	63.5	0.54	0.2054				
64-68				0.1675	3.35	6	2.096269
	68.5	1.14	0.3729				
69-73				0.0862	1.724	2	0.044186
	73.5	1.74	0.4591				
							4.37495

X tabel 7.815

With α = 5% and dk = 6-3 = 3, from the chi-square distribution table, obtained X_{table} = 7.815. Because X^2_{count} is lower than X^2_{table} (4.37 < 7.815). So, the distribution list is normal.

3) The Homogeneity Post-Test of the Experimental Class

Hypothesis :

$H_o : \sigma_1^2 = \sigma_2^2$

$H_A : \sigma_1^2 \neq \sigma_2^2$

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ \text{var}\, iant}{smallest\ \text{var}\, iant}$$

The Data of the research:

Variant	Experimental	Control
Total	1480	1188
N	20	20
$\overline{X}$	74.00	59.40
Variant (S^2)	79.995	79.620
Standard deviasi (S)	8.944	8.923

Biggest variant (Bv) = 79.995

Smallest variant (Sv) = 79.620

$n_1 = 20$

$n_2 = 20$

Based on the formula, it is obtained:

$$F = \frac{79.995}{79.620} = 1.005$$

With α = 5% and dk = (20-1=19): (20–1=19), obtained F_{table} = 2.15. Because F_{count} is lower than F_{table} (1.005 < 2.15). So, Ho is accepted and the two groups have same variant/ **homogeneous.**

2. The Hypothesis Test

The hypotheses in this research is a significance difference in noun test score between students taught using word find puzzle and those taught using non-word find puzzle.

In this research, because $\sigma_1^2 = \sigma_2^2$ (has same variant), the t-test formula is as follows:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

The data of the research:

Variant	Experiment	Control
Total	1480	1188
n	20	20
$\overline{X}$	74.00	59.40
Variant (s^2)	79.995	79.620
Standard deviasi (s)	8.944	8.923

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\ 2} + (n_2 - 1)S_2^{\ 2}}{n_1 + n_2 - 2}}$$

$$S = \sqrt{\frac{(20-1)79.995 + (20-1)79.62}{20 + 20 - 2}} = 8.933$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{74.00 - 59.40}{8.933\sqrt{\frac{1}{20} + \frac{1}{20}}} = 5.171$$

With α = 5% and dk = 20 + 20 – 2 = 38, obtained t_{table} = 1.68 (one tail). Because t_{count} is higher than t_{table} (1.68 < 5.171). So, Ho is accepted and there is no difference of the pre test average value from both groups.

From the computation above, the t-table is 1.68(one tail) by 5% alpha level of significance and dk = 20+20-2=38. T-value was 5.171. So, the t-value was higher than the critical value on the table (5.171 > 1.68).

From the result, it can be concluded that using word find puzzle is more effective than without using word find puzzle in teaching common noun. The hypothesis is accepted.

C. Discussion of Research Finding

The result of the research shows that the experimental class (the students who are taught using *word find puzzle*) has the mean value pre-test was 54.60 and post-test was 74.00. While the control class (the

students who are taught without using *word find puzzle*) has the mean value pre-test was 52.80 and post-test was 59.40.

On the other hand, the test of hypothesis using t-test formula shows the value of the t-test is higher than the critical value. The value of t-test is 5.171, while the critical value on $t_{s0,05}$ is 1.68 (one tail). It means that using *word find puzzle* more effective than without using *word find puzzle* in teaching common noun.

D. Limitation of the Research

The writer realizes that this research had not been done optimally. There were constraints and obstacles faced during the research process. Some limitations of this research are:

1. Relative short time of research makes this research could not be done maximum.
2. The research is limited at SDN 03 Tengengwetan Kab. Pekalongan. So that when the same research will be gone in other schools, it is still possible to get different result.
3. The implementation of the research process was less perfect. Because short time of this research, so the assessment was conducted not only based on the material given in the class but also the assignments or exercises given to students' homework on nouns.

Considering all those limitations, there is a need to do more research about teaching common noun using word find puzzle. So that, the more optimal result will be gained.