CHAPTER IV
ANALYSIS AND RESEARCH FINDING

A. The Description of Data

The purpose of this research is to measure the effectiveness of the use of words structure clues strategy to improve students' reading quality at Advanced Reading Class at 3rd semester of ELT Department at Tarbiyah and Teacher Training Faculty of IAIN Walisongo Semarang. This research used quantitative methods conducted from 2nd September up to 2nd October 2013. After conducting the research, the researcher got the data of research finding that is obtained by using the test of the experimental class and control class after conducting different treatment of learning process in both classes.

The implementation of this study was divided in two classes, namely the experimental class (TBI 3A) and the control class (TBI 3B). Before the activities were conducted, the writer determined the materials and lesson plan of learning. Learning in the experimental class was conducted by teaching reading using words structure clues strategy, while in the control class without using words structure clues strategy.

Test was given before and after the students followed the learning process that was provided by the writer. After the data were collected, the writer analyzed them to prove the truth of the hypothesis that had been formulated. However, before the analysis was done, first, the writer scored the results of the test that had been given to the

students. The question that was given to students consists of 20 item test.

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 pretest 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. Data Analysis And Hypothesis Test

1. The Data Analysis

a. The data analysis of try out test finding

This discussion covers validity, reliability, level of difficulty and discriminating power.

1) Validity of Instrument

As mentioned in chapter III, validity refers to the precise measurement of the test. In this study, item validity is used to know the index validity of the test. To know the validity of instrument, the writer used the Pearson product moment formula to analyze each item.

The following is the example of item validity computation for item number 1 and for the other items would use the same formula.

N = 40 $\sum Y = 2945$ $\left(\sum X\right)^2 = 19600$

$\sum XY = 11775$ $\sum X^2 = 700$

$\sum X = 140$ $\sum Y^2 = 232475$

$$r_{xy} = \frac{N\sum XY - \sum(X)\sum(Y)}{\sqrt{\left\{N\sum X^2 - \left(\sum X\right)^2\right\}\left\{N\sum Y^2 - \left(\sum Y\right)^2\right\}}}$$

$$r_{xy} = \frac{40(11775) - 140(2945)}{\sqrt{\{40(700) - 19600\}\{40(232475) - 8673025\}}}$$

$$r_{xy} = \frac{49700}{\sqrt{8400 \times 625975}}$$

$$r_{xy} = \frac{49700}{\sqrt{5258190000}}$$

$r_{xy} = 0{,}810$

From the computation above, the result of computing validity of the item number 1 is 0,810. After that, the writer consulted the result to the table of r Product Moment with the number of subject (N) = 40 and significance level 5% it is 0,312. Since the result of the computation is higher than *r* in table, the index of validity of the item number 1 is considered to be valid.

2) Reliability of Instrument

A good test must be valid and reliable. Besides the index of validity, the writer calculated the reliability of the test using Alpha formula.

$$r_{11} = \left|\frac{k}{k-1}\right|\left|1 - \frac{\sum \sigma_i^{\,2}}{\sigma_t^{\,2}}\right|$$

In which:

r_{11} = The reliability coefficient of items

$\sum \sigma_i^{\,2}$ = Total of variants each score items

$\sigma_t^{\,2}$ = Total of variants

k =The number of item in the test

With formula variant item in the test below:

$$\sigma_i^{\,2} = \left|\frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}\right|$$

Criteria:

If $r_{11} > r_{table}$ is reliable.

The following is the example of item variant computation for item number 1 and for the other items would use the same formula.

$$var = \left|\frac{700 - \frac{19600}{40}}{40}\right|$$

$$var = \left|\frac{750 - 490}{40}\right|$$

$$var = 6.5$$

$$\sigma_i^{\,2} = 5{,}250 + 5{,}859 + 5{,}484 + 5{,}484 + 5{,}250 + 4{,}984 + 4{,}359 + 5{,}484 + 3{,}188 + 2{,}250 + 4{,}688 + 3{,}609 + 5{,}859 + 2{,}734 + 5{,}250 + 5{,}688 + 3{,}609 + 5{,}250 + 4{,}688 + 4{,}984 = 93{,}953$$

$$\sigma_i^{\,2} = \left|\frac{\sum Y^2 - \frac{(\sum Y)^2}{N}}{N}\right|$$

$$\sigma_i^2 = \left|\frac{232475 - \frac{8673025}{40}}{40}\right|$$

$$\sigma_i^2 = \left|\frac{232475 - 216825{,}6}{40}\right|$$

$$\sigma_i^2 = 391.235$$

$$r_{11} = \left|\frac{k}{k-1}\right|\left|1 - \frac{\sum \sigma_i^{\,2}}{\sigma_t^{\,2}}\right|$$

$$r_{11} = \left|\frac{40}{39}\right|\left|1 - \frac{93{,}95}{391{,}23}\right|$$

$$r_{11} = (1{,}02)(1\text{-}0{,}24)$$

$$r_{11} = 0{,}775$$

From the computation above, it is found out that r_{11} (the total of reliability test) is 0.775, whereas the number of subjects is 20 and the critical value for

r-table with significance level 5% is 0,312. Thus, the value resulted from the computation is higher than its critical value. It could be concluded that the instrument used in this research is reliable.

3) Degree of the Test Difficulty

The following computation of the level difficulty for the item number 1 and for the other items would use the same formula.

$$\text{Degree of the Test Difficulty} = \frac{mean}{maximum\ score\ that\ decided}$$

In which,

$$Mean = \frac{the\ number\ of\ score\ participant\ test\ in\ each\ certain\ item}{the\ number\ of\ participant\ test}$$

Method to interpret degree of the test difficulty below:

Table 5.

The Interpretation of Degree of the Test Difficulty

Bigness of DD	Interpretation
Less of 0,30	Very difficult
0,30-0,70	Medium
More than 0,70	Very easy

The following is the example of item degree of the test difficulty computation for item number 1 and for the other items would use the same way.

Table 6.

Table of Degree of the Test Difficulty Computation for Item Number 1:

No	Code	X
1	TO-1	5
2	TO-2	5
3	TO-3	5
4	TO-4	5
5	TO-5	5
6	TO-6	5
7	TO-7	5
8	TO-8	5
9	TO-9	5
10	TO-10	5
11	TO-12	5
12	TO-13	5
13	TO-14	5
14	TO-15	5
15	TO-16	5
16	TO-18	5
17	TO-19	5
18	TO-20	5
19	TO-21	5
20	TO-23	5
21	TO-11	0
22	TO-17	0
23	TO-22	0
24	TO-24	0
25	TO-25	5
26	TO-26	0
27	TO-27	0
28	TO-28	5
29	TO-29	5
30	TO-30	0
31	TO-31	5

No	Code	X
32	TO-32	0
33	TO-33	5
34	TO-34	5
35	TO-35	5
36	TO-36	0
37	TO-37	0
38	TO-38	0
39	TO-39	0
40	TO-40	5
Sum	**40**	**140**

$$Mean = \frac{the\ number\ of\ score\ participant\ test\ in\ each\ certain\ item}{the\ number\ of\ participant\ test}$$

$$Mean = \frac{140}{40}$$

$$Mean = 3{,}5$$

$$D = \frac{mean}{maximum\ score}$$

$$D = \frac{3{,}5}{5}$$

$$= 0{,}7$$

From the computation above, the question number 1 can be said as the medium category, because the calculation result of the item number 1 is in the interval $0.7 < D \leq 1$

4) Discriminating Power

The formula that used in discriminating power computation as follow:

$$DP = \frac{MA - MB}{Maximum\ Score}$$

In which:

$MA = \frac{\sum X_A}{N_A}$ and $MB = \frac{\sum X_B}{N_B}$

In which:

DP : Discriminating Power

MA : The average from upper group

MB : The average from lower group

N_A : The number of student in upper group

N_B : The number of student in lower group

The way to interpret discriminating power according to Anas Sudjiono as follow:

Table 7.

Interpretation of Discriminating Power

Bigness of DP	Classification
Less of 0,20	*Poor*
0,20 – 0,40	*Satisfactory*
0,40 – 0,70	*Good*
0,70 – 1,00	*Excellent*
Negative sign	Thrown item

The following is the computation of the discriminating power for item number 1, and for other items would use the same way. Before computed using the formula, the data divided into 2 groups. They were upper group and lower group.

Table 8.

The Table of the Gathered Score of Item Number 1.

Upper Group			Lower Group		
No	Code	Score	No	Code	Score
1	TO-1	5	21	TO-11	0
2	TO-2	5	22	TO-17	0
3	TO-3	5	23	TO-22	0
4	TO-4	5	24	TO-24	0
5	TO-5	5	25	TO-25	5
6	TO-6	5	26	TO-26	0
7	TO-7	5	27	TO-27	0
8	TO-8	5	28	TO-28	5
9	TO-9	5	29	TO-29	5
10	TO-10	5	30	TO-30	0
11	TO-12	5	31	TO-31	5
12	TO-13	5	32	TO-32	0
13	TO-14	5	33	TO-33	5
14	TO-15	5	34	TO-34	5
15	TO-16	5	35	TO-35	5
16	TO-18	5	36	TO-36	0
17	TO-19	5	37	TO-37	0
18	TO-20	5	38	TO-38	0
19	TO-21	5	39	TO-39	0
20	TO-23	5	40	TO-40	5
Sum	**20**	**100**	**Sum**	**20**	**40**

$$MA = \frac{\sum X_A}{N_A} \qquad MA = \frac{100}{20} = 5$$

$$MB = \frac{\sum X_B}{N_B} \qquad MB = \frac{40}{20} = 2{,}0$$

$$DP = \frac{MA - MB}{Maximum\ Score}$$

$$DP = \frac{5 - 2{,}0}{5}$$

$$DP = 0{,}6$$

So, the discriminating power for item number 1 is good.

b. The data analysis of pretest value of the experimental class and the control class

Table 9.

The List of Pretest Value of the Experimental and Control Class

	EXPERIMENTAL CLASS				CONTROL CLASS			
No	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	E-21	85	21	441	C-11	80	19	576
2	E-28	85	21	441	C-23	80	19	361
3	E-2	80	16	256	C-6	75	14	196
4	E-12	80	16	256	C-22	75	14	196
5	E-14	80	16	256	C-17	70	9	196
6	E-26	80	16	256	C-18	70	9	196
7	E-18	75	11	121	C-26	70	9	81
8	E-29	75	11	121	C-30	70	9	81
9	E-31	75	11	121	C-1	65	4	81
10	E-3	70	6	36	C-27	65	4	81
11	E-9	70	6	36	C-9	65	4	81
12	E-10	70	6	36	C-12	65	4	81
13	E-11	70	6	36	C-14	65	4	81
14	E-27	70	6	36	C-21	65	4	81

15	E-32	70	6	36	C-4	60	-1	16
16	E-33	70	6	36	C-10	60	-1	16
17	E-5	65	1	1	C-15	60	-1	16
18	E-6	65	1	1	C-19	60	-1	16
19	E-7	65	1	1	C-20	60	-1	1
20	E-8	65	1	1	C-25	60	-1	1
21	E-17	65	1	1	C-28	60	-1	1
22	E-24	65	1	1	C-8	55	-6	1
23	E-34	65	1	1	C-29	55	-6	1
24	E-15	60	-4	16	C-2	50	-11	1
25	E-1	55	-9	81	C-5	50	-11	1
26	E-22	55	-9	81	C-27	50	-11	36
27	E-23	55	-9	81	C-13	45	-16	121
28	E-29	50	-14	196	C-16	45	-16	256
29	E-25	50	-14	196	C-24	45	-16	256
30	E-13	45	-19	361	C-3	40	-21	256
31	E-16	45	-19	361		1835	5	25
32	E-20	45	-19	361				
33	E-30	45	-19	361				
34	E-35	45	-19	361				
35	E-4	40	-24	576				
		2250	10	100				

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:

N = 35 Length of the class = 6

Maximum score = 85 $\sum x$ = 2250

Minimum score = 40 $\bar{x}$ =

64.29

K / Number of class = 8 Range = 46

Table 10.

Frequency Distribution

Class			f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
40	–	48	6	43.91523	1928.547139	263.49	11571.3
49	–	57	5	52.74568	2782.10678	263.73	13910.5
58	–	65	8	61.57613	3791.620238	492.61	30333
66	–	74	7	70.40659	4957.087513	492.85	34699.6
75	–	83	5	79.23704	6278.508604	396.19	31392.5
84	–	92	4	88.06749	7755.883513	352.27	31023.5
Total			35			2261.1	152930

$\overline{X} = \frac{\sum f_i \chi_i}{\sum f_i} =$	$\frac{2261.13012}{35}$	$=$		64.29
$S^2 =$	$\frac{n\sum f_i \chi_i^2 - \left(\sum f_i \chi_i\right)^2}{n(n-1)}$			
$=$	$\frac{35\ [152930.468] - [\ 2261.13012\ ]^2}{35\ [\ 35\ -\ 1\ ]}$			
$S^2 =$	163.45			
$S =$	12.78			

Table 11.

Normality Pretest of the Experimental Class

Class	Bk	Z_i	$P(Z_i)$	LD	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	39.5	-1.94	0.0263				
40 - 48				0.4203	14.7	6	5.1564
	48.3	-1.25	-0.3940				
49 - 57				0.1826	6.4	5	0.3034
	57.2	-0.56	-0.2113				
58 - 65				0.2644	9.3	8	0.1700
	66.0	0.13	0.0531				
66 - 74				0.2420	8.5	7	0.2551
	74.8	0.82	0.2951				
75 - 83				0.1400	4.9	5	0.0020
	83.7	1.51	0.4351				
84 - 92				0.0512	1.8	4	2.7207
	92.5	2.21	0.4863				
					X^2	=	8.6076

With α = 5% and dk = 6-1=5, from the chi-square distribution table, obtained X^2_{table} = 11.07. Because X^2_{count} is lower than X^2_{table} (8.61 < 11.07). 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:

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

The computation of normality test:

Maximum score = 80 N = 30

Minimum score = 40 Range = 41

K / Number of class = 6 $\bar{x}$ = 61.17

Length of the class = 7 $\sum x$ = 1835

Table 12.
Frequency Distribution

Class			f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
40	–	46	4	43	1849	172	7396
47	–	53	3	50	2500	150	7500
54	–	60	9	57	3249	513	29241
61	–	67	6	64	4096	384	24576
68	–	74	4	71	5041	284	20164
75	–	81	4	78	6084	312	24336
Total			30			1815	113213

$\overline{X}$ =	$\frac{\sum f_i \chi_i}{\sum f_i} = \frac{1815}{30}$	=	61.2	
S^2 =	$\frac{n\sum f_i \chi_i^{\,2} - \left(\sum f_i \chi_i\right)^2}{n(n-1)}$			
=	$\frac{30\ \left[113213.000\right] - \left[\ 1815\right]^2}{30\ \left[\ 30\ -\ 1\ \right]}$			
S^2 =	109.80			
S =	10.48			

Table 13.

Normality Pretest of the Control Class

Class	Bk	Z_i	$P(Z_i)$	LD	Ei	fi	$\frac{(f_i - E_i)^2}{E_i}$
	39.5	-2.07	0.0193				
40 - 46				0.0615	1.8	4	2.520
	46.5	-1.40	0.0808				
47 - 53				0.1514	4.5	3	0.523
	53.5	-0.73	0.2322				
54 - 60				0.2424	7.3	9	0.331
	60.5	-0.06	0.4746				
61 - 67				0.2526	7.6	6	0.328
	67.5	0.60	0.7272				
68 - 74				0.1712	5.1	4	0.251
	74.5	1.27	0.8984				
75 - 81				0.0754	2.3	4	1.332
	81.5	1.94	0.9738				
						χ^2 =	5.287

With α = 5% and dk = 6-3=3, from the chi-square distribution table, obtained X_{table} = 7.81. Because X^2_{count} is lower than X^2_{table} (5.29 < 7.81). So, the distribution list is normal.

3) The Homogeneity Pre-Test of the Experimental Class and Control 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:

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

Table 14.

The Data of the Research:

Source of variation	Experimental class	Control class
Total score	2250	1835
N	35	30
$\bar{X}$	64.29	61.17
Variant (s^2)	163.45	109.80
Deviation standard (s)	12.78	10.48

Biggest variant (Bv) = 163.45

Smallest variant (Sv) = 109.80

Based on the formula, it is obtained:

$F = \frac{163,45}{109,80} = 1.49$

With α = 5% and dk = (35-1 = 34) : (30-1 = 29), obtained F_{table} = 1.83. Because F_{count} is lower than F_{table} (1.49 < 1.83). So, Ho is accepted and the two groups have same variant **/ homogeneous.**

4) The average 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:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

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

Table 15.

The Data of the Research:

Source of variation	Experimental class	Control class
Total score	2250	1835
N	35	30
$\bar{X}$	64.286	61.167
Variant (S^2)	163.445	109.799
Deviation Standard (S)	12.785	10.478

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

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$s2 = \sqrt{\frac{(35-1)\,163.4454 + (30-1)\,109.799}{35 + 30 - 2}} = 11.779$$

$$t = \frac{64.29 - 61.17}{11.779\sqrt{\frac{1}{30} + \frac{1}{35}}} = 1.064$$

With α = 5% and dk = 35 + 30 – 2 = 63, obtained t_{table} = 2,00. Because t_{count} is lower than t_{table} (1.064 < 2.00). So, Ho is accepted and there is no difference of the pretest average value from both groups.

c. The Data Analysis of Post-test Scores in Experimental Class and Control Class.

Table 16.

The Value of the Post Test of the Experimental and Control Class

No	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	Code of the Students	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	E-5	90	10	100	C-8	75	13	169
2	E-10	90	10	100	C-27	75	13	169
3	E-16	90	10	100	C-10	70	8	64
4	E-22	90	10	100	C-11	70	8	64
5	E-25	90	10	100	C-15	70	8	64
6	E-27	90	10	100	C-17	70	8	64
7	E-30	90	10	100	C-22	70	8	64
8	E-31	90	10	100	C-25	70	8	64
9	E-34	90	10	100	C-26	70	8	64
10	E-1	85	5	25	C-30	70	3	9
11	E-3	85	5	25	C-4	65	3	9
12	E-9	85	5	25	C-14	65	3	9
13	E-13	85	5	25	C-2	60	-2	4
14	E-14	85	5	25	C-6	60	-2	4
15	E-17	85	5	25	C-7	60	-2	4
16	E-18	85	5	25	C-9	60	-2	4
17	E-21	85	5	25	C-16	60	-2	4
18	E-26	85	5	25	C-18	60	-2	4
19	E-2	80	0	0	C-20	60	-2	4
20	E-4	80	0	0	C-21	60	-2	4
21	E-6	80	0	0	C-23	60	-2	4
22	E-24	80	0	0	C-28	60	-2	4
23	E-28	80	0	0	C-29	60	-2	4
24	E-32	80	0	0	C-12	55	-7	49

25	E-33	80	-5	25	C-13	55	-7	49
26	E-8	75	-5	25	C-19	55	-7	49
27	E-11	75	-5	25	C-1	50	-12	144
28	E-12	75	-5	25	C-5	45	-17	289
29	E-29	75	-5	25	C-24	45	-17	289
30	E-7	70	-10	100	C-3	40	-22	484
31	E-15	70	-10	100		1845	1776	2265
32	E-35	65	-10	100				
33	E-19	60	-15	225				
34	E-23	60	-20	400				
35	E-20	50	-30	900				
		2810	10	3350				

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= 90		N	= 35
Minimum score	= 50	Range	= 40
K / Number of class	= 6	$\bar{x}$	= 80,29
Length of the class	= 7	$\sum x$	= 2810

Table 17.
Frequency Distribution

Class	f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
50 – 57	1	53.405	2852.045	53.405	2852.045
58 – 64	2	60.809	3697.745	121.618	7395.491
65 – 71	3	67.809	4598.073	203.427	13794.218
72 – 78	4	74.809	5596.400	299.236	22385.600
79 – 85	15	81.809	6692.727	1227.136	100390.908
86 – 92	10	88.809	7887.054	888.091	78870.545
Total	35			2792.914	225688.807

$$\overline{X} = \frac{\sum f_i \chi_i}{\sum f_i} = \frac{2793}{35} = 80.29$$

$$S^2 = \frac{n\sum f_i \chi_i^{\,2} - \left(\sum f_i \chi_i\right)^2}{n(n-1)}$$

$$= \frac{35\ \left[225688.807\right] - \left[2792.914\right]^2}{35\ \left[\ 35\ -\ 1\ \right]}$$

$$S^2 = 98.45$$

$$S = 9.92$$

Table 18.

Normality Post Test of the Experimental Class

Class	Bk	Z_i	$P(Z_i)$	LD	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	49.5	-3.10	-0.4990				
50 – 57				0.0093	0.3	1	1.3895
	57.3	-2.32	-0.4897				
58 – 64				0.0434	1.5	2	0.1526
	64.3	-1.61	-0.4463				
65 – 71				0.1291	4.5	3	0.5109
	71.3	-0.90	-0.3172				
72 – 78				0.2382	8.3	4	2.2572
	78.3	-0.20	-0.0790				
79 – 85				0.2726	9.5	15	3.1221
	85.3	0.51	0.1937				
86 – 92				0.1935	6.8	10	1.5368
	92.3	1.21	0.3872				
						χ^2 =	8.9692

With α = 5% and dk =6-3 =3, from the chi-square distribution table, obtained X^2_{table} =11.07. Because X^2_{count} is lower than X^2_{table} (8.96 < 11.07). 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= 75	N	= 30	
Minimum score	= 40	Range = 35	
K / Number of class	= 6	$\bar{x}$	= 61,50
Length of the class	= 6	$\sum x$	= 1845

Table 19.

Frequency Distribution

Class			f_i	X_i	X_i^2	$f_i.X_i$	$f_i.X_i^2$
40	–	47	3	43.500	1892.250	130.500	5676.750
48	–	55	4	51.500	2652.250	206.000	10609.000
56	–	63	11	59.500	3540.250	654.500	38942.750
64	–	71	10	67.500	4556.250	675.000	45562.500
72	–	79	2	75.500	5700.250	151.000	11400.500
80	–	87	0	83.500	6972.250	0.000	0.000
Total			30			1817.000	112191.500

$$\bar{X} = \frac{\sum f_i x_i}{\sum f_i} = \frac{1817}{30} = 61.50$$

$$S^2 = \frac{n\sum f_i x_i^2 - \left(\sum f_i x_i\right)^2}{n(n-1)}$$

$$= \frac{30\left[112191.500\right] - \left[1817.000\right]^2}{30\left[30 - 1\right]}$$

$$S^2 = 77.84$$

$$S = 8.82$$

Table 20.

Normality Post Test of the Control Class

Class	Bk	Z_i	$P(Z_i)$	LD	Ei	Oi	$\frac{(O_i - E_i)^2}{E_i}$
	39.5	-2.49	-0.4937				
40 - 47				0.0500	1.5	3	1.504
	47.5	-1.59	-0.4437				
48 - 55				0.1920	5.8	4	0.537
	55.5	-0.68	-0.2518				
56 - 63				0.3414	10.2	11	0.056
	63.5	0.23	0.0897				
64 - 71				0.2818	8.5	10	0.283
	71.5	1.13	0.3715				
72 - 79				0.1079	3.2	2	0.472
	79.5	2.04	0.4793				
80 - 87				0.0191	0.6	0	0.572
	87.5	2.95	0.4984				
						χ^2 =	3.423

With α = 5% and dk =6-3 =3, from the chi-square distribution table, obtained X^2_{table} =7.81. Because X^2_{count} is lower than X^2_{table} (3.42 < 7.81). So, the distribution list is normal.

3) The Homogenity Post-Test of the Experimental and Control 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:

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

Table 21.

The Data of the Research:

Source of variation	Experimental class	Control class
Total score	2810	1845
N	35	30
$\bar{X}$	80.286	61.500
Variant	98.445	77.845
Deviation standard	9.922	8.823

Biggest variant (Bv) = 98.445

Smallest variant (Sv) = 77.845

Based on the formula, it is obtained:

$$F = \frac{90{,}45}{77{,}84}$$

F = 1.265

With α = 5% and dk = (35-1=34): (30–1=29), obtained F_{table} = 1.832. Because F_{count} is lower than F_{table} (1.265 < 1.832). So, Ho is accepted and the two groups have same variant/ **homogeneous**

2. The Hypothesis Test

The hypothesis in this research namely there is a significant difference in unlocking the meaning of words achievement score between students taught using words structure clues strategy and those taught without using words structure clues strategy.

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:

$\overline{x_1}$	=80.29	$\overline{x_2}$	= 61.50
S_1^2	= 98.45	S_2^2	= 77.84
n_1	= 35	n_2	= 30

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

$$s = \sqrt{\frac{(35-1)\,98.445 + (30-1)\,77.845}{35 + 30 - 2}} = 9.4320$$

$$t = \frac{80.29 - 61.50}{9.432\sqrt{\frac{1}{35} + \frac{1}{30}}} = 8.005$$

From the computation above, the t-table is 1.67 by 5% alpha level of significance and dk = 35+30-2=63. T-value was 8.005. So, the t-value was higher than the critical value on the table (8.005 > 1.67).

From the result, it can be concluded that there is a significant difference in words structure clues achievement between students were taught by using words structure clues and those were not taught by using words structure clues. The hypothesis is accepted.

C. Discussion of the Research Findings

1. The score of Pre test

   Based on the calculations of normality and homogeneity test from class TBI 3A as the experimental class and class TBI 3B as the control class is normal distribution and homogeneous.

2. The score of post test

   The result of the research showed that the experimental class (the students who were taught using words structure clues strategy) had the mean value 80.29. Meanwhile, the control class (the students who were taught without using words structure clues strategy) had the mean value 61.50. It can be said that understanding the meaning of words achievement to improve reading quality by using words structure clues of experimental class is higher than the control class.

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, $t_{count} > t_{table}$ (t_{count} higher than t_{table}). The value of t-test is 8.005, while the critical value on $t_{s0,05}$ is 1.67. It means that there is a significant difference in understanding the meaning of words achievement between students taught using words structure clues strategy and those taught without words structure clues strategy. In this case, the use of words structure clues strategy is necessary needed to unlock the meaning of word to improve students' reading quality.

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 IAIN Walisongo Semarang, specifically at ELT Department at Tarbiyah and Teacher Training Faculty. So that when the same research will be gone in other university, it is still possible to get different result.
3. The implementation of the research process was less smooth, this was more due to lack of experience and knowledge of the writer.

Considering all those limitations, there is a need to do more research about improving reading quality to unlock the meaning of words by using words structure clues strategy. So that, the more optimal result will be gained.