

CHAPTER IV

RESEARCH FINDING

A. Research Finding

In this chapter the writer observed and collected some data with statistically to find out the influence of learning environment toward their achievement

1. Research Description

This study tried to find out the level of students' learning environment as mentioned in the research above. To collect the data, researcher used questionnaire given to the respondents on 11st of April to 15th of April 2016, the respondent were 2013 English Education Department students of Walisongo State Islamic University Semarang.

The source of this research there were 106 students. If the population more than 100 respondents, the researcher can take up to 25% of population for sample, So the researcher took 25% sample 106 which were 27 respondents.

2. Validity of The Instrument

To know the validity of instrument, the writer used the Pearson product moment formula to analyze each item. It was obtained that from 60 items, were 49 items valid and 11 items were invalid, it was invalid with the reason the computation result of their r_{xy} value (the correlation of score each item) was lower

than their table of value. The complete data can be looked at appendix 1.7

Table 4.1
Validity of each item

Criteria	r_{table}	Number of Questions	Total
Valid	0,3809	1,2,3,4,5,7,8,11,12, 13,14,15,16,17,18, 20,21,24,25,26,27, 28,29,31,32,33,36, 37,38,40,41,42,43, 44,45,46,47,48,49, 50,51,52,53,54,55, 56,57,58,59	49
Invalid	0,3809	6,9,10,19,22,23,30, 34,38,47,60	11

Table 4.2
Example Validity Question Number One

No	X	Y	X.X	Y.Y	X.Y
1	3	175	9	30625	525
2	3	161	9	25921	483
3	4	225	16	50625	900
4	5	224	25	50176	1120
5	5	258	25	66564	1290

6	5	242	25	58564	1210
7	3	185	9	34225	555
8	4	207	16	42849	828
9	2	175	4	30625	350
10	2	130	4	16900	260
11	4	210	16	44100	840
12	4	227	16	51529	908
13	4	236	16	55696	944
14	5	247	25	61009	1235
15	5	234	25	54756	1170
16	2	122	4	14884	244
17	3	198	9	39204	594
18	4	232	16	53824	928
19	3	183	9	33489	549
20	4	216	16	46656	864
21	3	196	9	38416	588
22	4	218	16	47524	872
23	5	235	25	55225	1175
24	2	162	4	26244	324
25	3	197	9	38809	591
26	2	229	4	52441	458
27	2	228	4	51984	456
	95	5552	365	1172864	20261

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

$$= \frac{(27.20261) - (95.5552)}{\sqrt{\{(27.365) - (95.95)\}\{(27.1172863) - (5552.552)\}}}$$

$$\begin{aligned}
&= \frac{(547047)-(527440)}{\sqrt{\{9855-9025\}\{31667328-30824704\}}} \\
&= \frac{19607}{\sqrt{699377920}} \\
&= \frac{19607}{26445.75} \\
&= \mathbf{0.741}
\end{aligned}$$

3. Reliability Analysis

After validity items had been done, the next analysis was to test the reliability of the instrument. It was done to find out whether a test had higher critical score and gave the consistency of the questionnaire scores or not. In this research the researcher use split half technique after being calculated with product moment formulas, such as follow:

$$\begin{aligned}
r_{11} &= \frac{2xr_{1/21/2}}{(1+r_{1/2 1/2})} \\
&= \frac{2 \times 0,843068}{1+0,843068} \\
&= 0,914853
\end{aligned}$$

From the computation above, it was obtained 0,914853, for α 5% with $N = 27$. it was obtained 0,3809 it could be concluded that the instrument that were used in this research was reliable. The complete data can be looked at appendix 1.8.

4. Data Analysis

a. The students learning achievement

Table 4.3
The score of students' learning achievement

No	Code	Y
1	R-01	129.5
2	R-02	124.5
3	R-03	131.6
4	R-04	132
5	R-05	125
6	R-06	125.5
7	R-07	123
8	R-08	123.7
9	R-09	127.5
10	R-10	123.2
11	R-11	122.6
12	R-12	131.8
13	R-13	133.6
14	R-14	126.5
15	R-15	128.6
16	R-16	122.6
17	R-17	121.2
18	R-18	125.7
19	R-19	130.2
20	R-20	130.9
21	R-21	126.7
22	R-22	26.8
23	R-23	126.3
24	R-24	125.6
25	R-25	119.3
26	R-26	130.1
27	R-27	130
	Σ	3424

1) Interval Total (K)

$$\begin{aligned}K &= 1 + 3.3 \text{ Log } N \\&= 1 + 3.3 \text{ Log } 27 \\&= 1 + 3.3 (1.431) \\&= 1 + 4.722 \\&= 5.722 \\&= 6\end{aligned}$$

2) Mean

$$\begin{aligned}\text{Me} &= \frac{\Sigma Y}{N} \\&= \frac{3424}{27} \\&= 126.8\end{aligned}$$

3) Range

$$\begin{aligned}R &= H-L+1 \\&= 133.6 - 119.3 + 1 \\&= 14.3 + 1 \\&= 15.3\end{aligned}$$

R = Range

H = The highest total

L = The lowest total

4) Interval Class (i)

$$\begin{aligned}i &= \frac{R}{K} \\&= \frac{15.3}{6} \\&= 2.55 \\&= 3\end{aligned}$$

Table 4.4
Frequency Distribution of Students' Learning Achievement

No	Interval	f _i	Xi	Fi.xi	xi-M	(xi-M) ²	fi(xi-M) ²
1	134-136	0	135	0	8.2	67.24	0
2	131-133	4	130	520	3.2	10.24	40.96
3	128-130	6	127	762	0.2	0,04	0.24
4	125-127	9	126	1134	-0.8	0.64	5.76
5	122-124	6	121	726	-5.8	33.64	201.84
6	119-121	2	120	240	-6.8	46.24	92.48
Total				3382			341.28

Based on the result of mean calculation above, the next step is making the category. They are as following

$$\begin{aligned}
 SD &= \frac{\sum f_i(x_i-M)^2}{n-1} \\
 &= \frac{341.28}{27-1} \\
 &= 13.126 \\
 &= \sqrt{13.26} \\
 &= 3.641
 \end{aligned}$$

$$\begin{aligned}
 M &= \frac{\sum f_i(x_i-M)^2}{f_i} \\
 &= \frac{3382}{27} \\
 &= 125.25
 \end{aligned}$$

$$M+1.5 \cdot SD = 125.25 + 1.5 (3.641) = 130.711$$

$$M+ 0.5 \cdot SD = 125.25 + 0.5 (3.641) = 127.07$$

$$M- 0.5 \cdot SD = 125.25 - 0.5 (3.641) = 123.687$$

$$M - 1.5 \cdot SD = 125.25 - 1.5 (3.641) = 120.56$$

Table 4.5
The Quality of Students' Learning Achievement

Interval	Category	Quality
>130.7	Very Good	
127.07 – 130.7	Good	
123.68 – 127.07	Enough	Enough
120.56 – 123.68	Low	
<120.56	Very low	

Based on the table above, it is known that the mean from students' learning environment is enough.

b. The students learning environment

In this research, the writer used the questionnaire for the research to measure students' learning environment. Questionnaire has 245 point as highest score and 49 as the lowest score. Here the result of the questionnaire from the students.

Table 4.6
The score of students' learning environment

No	Code	X
1	R-01	180
2	R-02	165
3	R-03	185
4	R-04	200
5	R-05	171
6	R-06	178
7	R-07	147
8	R-08	168
9	R-09	179
10	R-10	170
11	R-11	160

12	R-12	205
13	R-13	194
14	R-14	185
15	R-15	178
16	R-16	163
17	R-17	158
18	R-18	177
19	R-19	175
20	R-20	175
21	R-21	180
22	R-22	173
23	R-23	177
24	R-24	188
25	R-25	149
26	R-26	193
27	R-27	196
	Σ	4769

Based on the above table, the highest amount of students' learning achievement is 205 and the lowest is 147. The score (X) is 4769 and the participants (N) are 27. The next step is to determine distribution frequency of the students' learning achievement. Distribution frequency of the students' learning achievement is made based on the following steps:

1) Interval Total (K)

$$\begin{aligned}
 K &= 1 + 3.3 \text{ Log } N \\
 &= 1 + 3.3 \text{ Log } 27 \\
 &= 1 + 3.3 (1.431) \\
 &= 1 + 4.722
 \end{aligned}$$

$$= 5.722$$

$$= 6$$

2) Mean

$$\begin{aligned} \text{Me} &= \frac{\sum x}{N} \\ &= \frac{4650}{27} \\ &= 172 \end{aligned}$$

3) Range

$$\begin{aligned} R &= H-L+1 \\ &= 205 - 147 + 1 \\ &= 59 \end{aligned}$$

R = Range

H = The highest total

L = The lowest total

4) Interval Class (i)

$$\begin{aligned} i &= \frac{R}{K} \\ &= \frac{59}{6} \\ &= 9.83 \\ &= 10 \end{aligned}$$

Below is the table of 4.2 of frequency distribution of the students' learning environment.

Table 4.7
Frequency Distribution of Students' Learning Environment

No	Interval	f _i	Xi	Fi.xi	xi-M	(xi-M) ²	fi(xi-M) ²
1	197-206	2	201.5	403	29.5	870.25	1740.5
2	187-196	3	191.5	574.5	19.5	380.25	1140.75
3	177-186	8	181.5	1452	9.5	90.25	724
4	167-176	6	171.5	1029	-0.5	0.25	1.5
5	157-166	5	161.5	807.5	-10.5	110.25	551.25
6	147-156	2	151.5	303	-20.5	420.25	840.5
	Total			4569			4998.5

Based on the result of table above, the next step is making the category. They are as following

$$\begin{aligned}
 SD &= \frac{\sum fi(xi-M)^2}{n-1} \\
 &= \frac{4998.5}{27-1} \\
 &= 192.25 \\
 &= \sqrt{192.25} \\
 &= 13.865
 \end{aligned}$$

$$\begin{aligned}
 M &= \frac{\sum fi(xi-M)}{fi} \\
 &= \frac{4569}{27} \\
 &= 169.22
 \end{aligned}$$

$$M+1.5 \cdot SD = 169.22 + 1.5 (13.863) = 190.017$$

$$M+0.5 \cdot SD = 169.22 + 0.5 (13.863) = 176.152$$

$$M-0.5 \cdot SD = 169.22 - 0.5 (13.863) = 162.287$$

$$M-1.5 \cdot SD = 169.22 - 1.5 (13.863) = 148.922$$

Table 4.8
The Quality of Students' Learning Environment

Interval	Category	Quality
>190	Very Good	
176-190	Good	Good
162-175	Enough	
148-161	Low	
<148	Very low	

Based on the table above, it is known that the mean from students' learning environment is good.

c. Test of Normality

a) Normality test of students learning environment

Table 4.9
The Normality Test Data of Students Learning Environment

Interval	f_i	f_h	$f_i - f_h$	$(f_i - f_h)^2$	$\frac{(f_i - f_h)^2}{f_h}$
197- 206	2	0.7	1.3	1.69	2.4
187-196	3	4	-1	1	0.25
177-186	8	9	-1	1	0.1
167- 176	6	9	-4	16	1.7
157-166	5	4	1	1	0.2
147-156	2	0.7	1.3	1.69	2.4
χ^2					7.05

Based on the computation above are gained X^2 score = 7.05 and X^2 table 11.070 and $dk = 6-1 = 5$, $\alpha = 5\%$. So X^2 score $< X^2$ table it means the result of data have normal distribution.

b) Normality test of students learning achievement

Table 5.0
The Normality Test Data of Students Learning achievement

Interval	f_i	f_h	$f_i - f_h$	$(f_i - f_h)^2$	$\frac{(f_i - f_h)^2}{f_h}$
134-136	0	0.7	-0.7	0.49	0.7
131-133	4	4	0	0	0
128-130	6	9	-3	9	1
125-127	9	9	0	0	0
122-124	6	4	2	4	4
119-121	2	0.7	1.3	1.69	2.41
X^2					8.11

Based on the computation above are gained X^2 score = 8.11 and X^2 table 11.070 and $dk = 6-1 = 5$, $\alpha = 5\%$. So X^2 score $< X^2$ table it means the result of data have normal distribution.

d. Hypothesis Analysis

The analysis is used to test the hypothesis is accepted or rejected. In this research, the hypothesis is there is positive influence of students' learning environment toward their learning achievement at the 6th semester of English Education Departments at Education and Teacher Training Faculty Walisongo State Islamic University in the academic year 2015/2016.

Table 5.1
Regression Analysis Table of Students' Learning Environment (x) and students' Learning Achievement (y)

No	X	Y	Y ²	X ²	XY
R1	180	129.5	32400	16770.25	23310
R2	165	124.5	27225	15500.25	20542.5
R3	185	131.6	34225	17318.56	24346
R4	200	132	40000	17424	26400
R5	171	125	29241	15625	21375
R6	178	125.5	31684	15750.25	22339
R7	147	123	21609	15129	18081
R8	168	123.7	28224	15301.69	20781.6
R9	179	127.5	32041	16256.25	22822.5
R10	170	123.2	28900	15178.24	20944
R11	160	122.6	25600	15030.76	19616
R12	205	131.8	42025	17371.24	27019
R13	194	133.6	37636	17848.96	25918.4
R14	185	126.5	34225	16002.25	23402.5
R15	178	128.6	31684	16537.96	22890.8
R16	163	122.6	26569	15030.76	19983.8

R17	158	121.2	24964	14689.44	19149.6
R18	177	125.7	31329	15800.49	22248.9
R19	175	130.2	30625	16952.04	22785
R20	175	130.9	30625	17134.81	22907.5
R21	180	126.7	32400	16052.89	22806
R22	173	126.8	29929	16078.24	21936.4
R23	177	126.3	31329	15951.69	22355.1
R24	188	125.6	35344	15775.36	23612.8
R25	149	119.3	22201	14232.49	17775.7
R26	193	130.1	37249	16926.01	25109.3
R27	196	130	38416	16900	25480
Σ	4769	3424	847699	434568.9	605938.4

$$\begin{aligned}
 N &= 27 \\
 \Sigma X &= 4769 \\
 \Sigma Y &= 3424 \\
 \Sigma X^2 &= 847\,699 \\
 \Sigma Y^2 &= 434\,569 \\
 \Sigma XY &= 605\,938
 \end{aligned}$$

1) Looking for the correlation between X and Y

$$\begin{aligned}
 \Sigma x^2 &= \Sigma X^2 - \frac{(\Sigma X)^2}{N} \\
 &= 847669 - \frac{(4769)^2}{27} \\
 &= 847669 - \frac{22743361}{27} \\
 &= 847699 - 842346.704 \\
 &= 5352.2
 \end{aligned}$$

$$\Sigma y^2 = \Sigma Y^2 - \frac{(\Sigma Y)^2}{N}$$

$$\begin{aligned}
&= 434569 - \frac{(3424)^2}{27} \\
&= 434569 - \frac{11723776}{27} \\
&= 434569 - 434213.9 \\
&= 355.1
\end{aligned}$$

$$\begin{aligned}
\sum xy &= \sum XY - \frac{(\sum X)(\sum Y)}{N} \\
&= 605938 - \frac{(4769)(3424)}{27} \\
&= 605938 - \frac{16329056}{27} \\
&= 605938 - 604779.852 \\
&= 1158.148
\end{aligned}$$

$$\begin{aligned}
r_{xy} &= \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}} \\
&= \frac{\sum 1158.148}{\sqrt{(\sum 5352.2)(\sum 355.1)}} \\
&= \frac{\sum 1158.148}{\sqrt{1900566.22}} \\
&= \frac{\sum 1158.148}{1378610} \\
&= 0.841
\end{aligned}$$

2) Looking for coefficient correlation

$$\begin{aligned}
\text{KD} &= r_{xy}^2 \cdot 100\% \\
&= 0.841^2 \cdot 100\% \\
&= 0.707 \cdot 100\% \\
&= 70.7\%
\end{aligned}$$

3) Examining the correlation

$$t_h = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

$$\begin{aligned}
&= \frac{0.841\sqrt{27-2}}{\sqrt{1-0.707}} \\
&= \frac{0.841\sqrt{27-2}}{\sqrt{1-0.707}} \\
&= \frac{0.841\sqrt{25}}{\sqrt{0.293}} \\
&= \frac{0.841.5}{0.54129} \\
&= \frac{4.205}{0.542} \\
&= 7.758
\end{aligned}$$

Because $t_h = 7.758 > t$ tabel 2.052 correlation between x and y is significant

4) Looking for regression similarity

$$Y = aX + K$$

With the calculation of coefficient a and k as below

1) The calculation of coefficient a

$$\begin{aligned}
a. &= \frac{N\sum xy - \sum x \sum y}{N\sum x^2 - (\sum x)^2} \\
&= \frac{27\sum 605938 - (4769)(3424)}{27(847699) - (4769)^2} \\
&= \frac{16360326 - 16329056}{22887873 - 22743361} \\
&= \frac{31270}{144512} \\
&= 0.216
\end{aligned}$$

2) The calculation of coefficient k

$$\begin{aligned}
k. &= \frac{\sum y}{n} - a \frac{\sum x}{n} \\
&= \frac{3424}{27} - 0.216 \frac{4769}{27} \\
&= 126.823 - 0.216(176.629)
\end{aligned}$$

$$= 126.823 - 38.241$$

$$= 88.582$$

From the computation above, the writer concluded that the regression similarity is:

$$Y = aX + K$$

$$= 0.216 X + 88.582$$

5) Examining the regression significant

After computing the students' score, the writer began to examine the regression significant based on the steps:

Looking for varian regression

$$F_{reg} = \frac{RK_{reg}}{RK_{res}}$$

a) Total of regression quadrate (JK_{reg})

$$JK_{reg} = \frac{\sum xy^2}{\sum x^2}$$

$$= \frac{(1\ 158.148)^2}{5352.2}$$

$$= \frac{1341306.79}{5352.2}$$

$$= 250,608$$

b) Total of residue quadrate (JK_{res})

$$JK_{res} = \sum y^2 - \frac{\sum xy^2}{\sum x^2}$$

$$= 355.1 - \frac{(1\ 158.148)^2}{5352.2}$$

$$\begin{aligned}
&= \frac{1341306.79}{5352.2} \\
&= 355.1 - 250.608 \\
&= 104.492
\end{aligned}$$

c) The average of regression quadrate (RK_{reg})

$$\begin{aligned}
RK_{reg} &= \frac{JK_{reg}}{db_{reg}} \\
&= \frac{250.608}{1} \\
&= 250.608
\end{aligned}$$

$$\begin{aligned}
db_{res} &= N-2 \\
&= 27-2 \\
&= 25
\end{aligned}$$

$$\begin{aligned}
RK_{res} &= \frac{JK_{res}}{db_{res}} \\
&= \frac{104,492}{25} \\
&= 4.17
\end{aligned}$$

$$\begin{aligned}
F_{reg} &= \frac{RK_{reg}}{RK_{res}} \\
&= \frac{250,608}{4.17} \\
&= 60.186
\end{aligned}$$

The hypothesis is that there is a positive and significant influence of students' learning environment toward their learning achievement. Because $F_{reg} > F_{table}$, that is $60.186 > 1.88$, it means the value is significant or the hypothesis is accepted.