# CHAPTER IV

# RESEARCH FINDING

This chapter presents the results and discussion of the research. It is divided into the calculation of tryout test, the data description, the data analysis, and the data interpretation.

## 4.1 The Calculation of Trying Out Instrument

Trying out of instrument was needed in order to know the validity and reliability of the test items. The try-out test has been held on October 28th, 2018 in XII TKJ 2 as sample of try-out test group which is consisting of 18 students. In this part, the data showed the calculation of validity in the tryout instrument.

### 4.1.1 The Validity of Try Out Test

The formula of manual calculation is the correlation product moment formula. The formula as follows:

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

The item test is valid if $r_{xy} > r_{table}$

$r_{table}$= 0,4683

**Table 4.1**

**The Computation of Validity by Using Manual Calculation**

| No | The Value of $r_{xy}$ | Criteria |
|---|---|---|
| 1. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$ | **Invalid** |

| | | |
|---|---|---|
| | $r_{xy} = \frac{11,33}{\sqrt{(4)}(702,44)}$<br>$r_{xy} = \frac{11,33}{\sqrt{2809,76}}$<br>$r_{xy} = \frac{11,33}{53}$<br>$r_{xy} = 0,213$ | |
| 2. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{7,55}{\sqrt{(4,44)}(702,44)}$<br>$r_{xy} = \frac{7,55}{\sqrt{3118,83}}$<br>$r_{xy} = \frac{7,55}{55,84}$<br>$r_{xy} = 0,135$ | **Invalid** |
| 3. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{33,55}{\sqrt{(4,44)}(702,44)}$<br>$r_{xy} = \frac{33,55}{\sqrt{3118,83}}$<br>$r_{xy} = \frac{33,55}{55,84}$<br>$r_{xy} = 0,600$ | **Valid** |

| | | |
|---|---|---|
| 4. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{12{,}88}{\sqrt{(1{,}77)(702{,}44)}}$<br>$r_{xy} = \frac{12{,}88}{\sqrt{1243{,}31}}$<br>$r_{xy} = \frac{12{,}88}{35{,}26}$<br>$r_{xy} = 0{,}365$ | **Invalid** |
| 5. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{16{,}77}{\sqrt{(3{,}11)(702{,}44)}}$<br>$r_{xy} = \frac{16{,}77}{\sqrt{2184{,}58}}$<br>$r_{xy} = \frac{16{,}77}{46{,}73}$<br>$r_{xy} = 0{,}358$ | **Invalid** |
| 6. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{31{,}44}{\sqrt{(4{,}44)(702{,}44)}}$<br>$r_{xy} = \frac{31{,}44}{\sqrt{3118{,}83}}$<br>$r_{xy} = \frac{31{,}44}{55{,}84}$<br>$r_{xy} = 0{,}563$ | **Valid** |

| | | |
|---|---|---|
| 7. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{-8{,}44}{\sqrt{(0{,}94)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{-8{,}44}{\sqrt{660{,}29}}$<br>$\boldsymbol{r_{xy}} = \frac{-8{,}44}{25{,}69}$<br>$\boldsymbol{r_{xy}} = -0{,}328$ | **Invalid** |
| 8. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}55}{\sqrt{(4,44)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}55}{\sqrt{3118{,}83}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}55}{55{,}84}$<br>$\boldsymbol{r_{xy}} = 0{,}582$ | **Valid** |
| 9. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{18{,}22}{\sqrt{(3{,}61)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{18{,}22}{\sqrt{2535{,}80}}$<br>$\boldsymbol{r_{xy}} = \frac{18{,}22}{50{,}35}$<br>$\boldsymbol{r_{xy}} = 0{,}361$ | **Invalid** |

| | | |
|---|---|---|
| 10. | $\boldsymbol{r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}}$<br>$\boldsymbol{r_{xy} = \frac{27{,}55}{\sqrt{(4,44)(702{,}44)}}}$<br>$\boldsymbol{r_{xy} = \frac{27{,}55}{\sqrt{3118{,}83}}}$<br>$\boldsymbol{r_{xy} = \frac{27{,}55}{55{,}84}}$<br>$\boldsymbol{r_{xy} = 0{,}493}$ | **Valid** |
| 11. | $\boldsymbol{r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}}$<br>$\boldsymbol{r_{xy} = \frac{2{,}77}{\sqrt{(3{,}61)(702{,}44)}}}$<br>$\boldsymbol{r_{xy} = \frac{2{,}77}{\sqrt{2535{,}80}}}$<br>$\boldsymbol{r_{xy} = \frac{2{,}77}{50{,}35}}$<br>$\boldsymbol{r_{xy} = 0{,}055}$ | **Invalid** |
| 12. | $\boldsymbol{r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}}$<br>$\boldsymbol{r_{xy} = \frac{-4{,}11}{\sqrt{(4{,}27)(702{,}44)}}}$<br>$\boldsymbol{r_{xy} = \frac{-4{,}11}{\sqrt{2999{,}41}}}$<br>$\boldsymbol{r_{xy} = \frac{-4{,}11}{54{,}76}}$<br>$\boldsymbol{r_{xy} = -0{,}075}$ | **Invalid** |

| | | |
|---|---|---|
| 13. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{31{,}33}{\sqrt{(4)(702{,}44)}}$<br>$r_{xy} = \frac{31{,}33}{\sqrt{2809{,}76}}$<br>$r_{xy} = \frac{31{,}33}{53}$<br>$r_{xy} = 0{,}591$ | **Valid** |
| 14. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{-24{,}22}{\sqrt{(3{,}11)(702{,}44)}}$<br>$r_{xy} = \frac{-24{,}22}{\sqrt{2184{,}58}}$<br>$r_{xy} = \frac{-24{,}22}{46{,}73}$<br>$r_{xy} = -0{,}518$ | **Invalid** |
| 15. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{2}{\sqrt{(4,5)(702{,}44)}}$<br>$r_{xy} = \frac{2}{\sqrt{3160{,}98}}$<br>$r_{xy} = \frac{2}{56{,}22}$<br>$r_{xy} = 0{,}035$ | **Invalid** |

| | | |
|---|---|---|
| 16. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{12{,}11}{\sqrt{(4,27)(702{,}44)}}$<br>$r_{xy} = \frac{12{,}11}{\sqrt{2999{,}41}}$<br>$r_{xy} = \frac{12{,}11}{54{,}76}$<br>$r_{xy} = 0{,}221$ | **Valid** |
| 17. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{27{,}11}{\sqrt{(4{,}27)(702{,}44)}}$<br>$r_{xy} = \frac{27{,}11}{\sqrt{2999{,}41}}$<br>$r_{xy} = \frac{27{,}11}{54{,}76}$<br>$r_{xy} = 0{,}495$ | **Valid** |
| 18. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{22{,}77}{\sqrt{(3{,}11)(702{,}44)}}$<br>$r_{xy} = \frac{22{,}77}{\sqrt{2184{,}58}}$<br>$r_{xy} = \frac{22{,}77}{46{,}73}$<br>$r_{xy} = 0{,}487$ | **Valid** |

| | | |
|---|---|---|
| 19. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{27{,}44}{\sqrt{(4{,}44)(702{,}44)}}$<br>$r_{xy} = \frac{27{,}44}{\sqrt{3118{,}83}}$<br>$r_{xy} = \frac{27{,}44}{55{,}84}$<br>$r_{xy} = 0{,}491$ | **Valid** |
| 20. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{38{,}88}{\sqrt{(4{,}27)(702{,}44)}}$<br>$r_{xy} = \frac{38{,}88}{\sqrt{2999{,}41}}$<br>$r_{xy} = \frac{38{,}88}{54{,}76}$<br>$r_{xy} = 0{,}710$ | **Valid** |
| 21. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{23{,}33}{\sqrt{(2{,}5)(702{,}44)}}$<br>$r_{xy} = \frac{23{,}33}{\sqrt{1756{,}1}}$<br>$r_{xy} = \frac{23{,}33}{41{,}90}$<br>$r_{xy} = 0{,}556$ | **Valid** |

| | | |
|---|---|---|
| 22. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{15{,}11}{\sqrt{(4,27)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{15{,}11}{\sqrt{2999{,}41}}$<br>$\boldsymbol{r_{xy}} = \frac{15{,}11}{54{,}76}$<br>$\boldsymbol{r_{xy}} = 0{,}275$ | **Invalid** |
| 23. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{31{,}44}{\sqrt{(4{,}44)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{31{,}44}{\sqrt{3118{,}83}}$<br>$\boldsymbol{r_{xy}} = \frac{31{,}44}{55{,}84}$<br>$\boldsymbol{r_{xy}} = 0{,}563$ | **Valid** |
| 24. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}88}{\sqrt{(4{,}27)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}88}{\sqrt{2999{,}41}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}88}{54{,}76}$<br>$\boldsymbol{r_{xy}} = 0{,}600$ | **Valid** |

| | | |
|---|---|---|
| 25. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{20{,}33}{\sqrt{(2{,}5)(702{,}44)}}$<br>$r_{xy} = \frac{20{,}33}{\sqrt{1756{,}1}}$<br>$r_{xy} = \frac{20{,}33}{41{,}90}$<br>$r_{xy} = 0{,}485$ | **Valid** |
| 26. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{1{,}88}{\sqrt{(4{,}27)(702{,}44)}}$<br>$r_{xy} = \frac{1{,}88}{\sqrt{2999{,}41}}$<br>$r_{xy} = \frac{1{,}88}{54{,}76}$<br>$r_{xy} = 0{,}034$ | **Invalid** |
| 27. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{32{,}77}{\sqrt{(3{,}61)(702{,}44)}}$<br>$r_{xy} = \frac{32{,}77}{\sqrt{2535{,}80}}$<br>$r_{xy} = \frac{32{,}77}{50{,}35}$<br>$r_{xy} = 0{,}650$ | **Valid** |

| | | |
|---|---|---|
| 28. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}11}{\sqrt{(4{,}27)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}11}{\sqrt{2999{,}41}}$<br>$\boldsymbol{r_{xy}} = \frac{32{,}11}{54{,}76}$<br>$\boldsymbol{r_{xy}} = 0{,}586$ | **Valid** |
| 29. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{29{,}33}{\sqrt{(4)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{29{,}33}{\sqrt{2809{,}76}}$<br>$\boldsymbol{r_{xy}} = \frac{29{,}33}{53}$<br>$\boldsymbol{r_{xy}} = 0{,}553$ | **Valid** |
| 30. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{30{,}22}{\sqrt{(3{,}61)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{30{,}22}{\sqrt{2535{,}80}}$<br>$\boldsymbol{r_{xy}} = \frac{30{,}22}{50{,}35}$<br>$\boldsymbol{r_{xy}} = 0{,}600$ | **Valid** |

| | | |
|---|---|---|
| 31. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{4{,}88}{\sqrt{(1{,}77)(702{,}44)}}$<br>$r_{xy} = \frac{4{,}88}{\sqrt{1243{,}31}}$<br>$r_{xy} = \frac{4{,}88}{35{,}26}$<br>$r_{xy} = 0{,}138$ | **Invalid** |
| 32. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{32}{\sqrt{(4,5)(702{,}44)}}$<br>$r_{xy} = \frac{32}{\sqrt{3160{,}98}}$<br>$r_{xy} = \frac{32}{56{,}22}$<br>$r_{xy} = 0{,}569$ | **Valid** |
| 33. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{8{,}33}{\sqrt{(4)(702{,}44)}}$<br>$r_{xy} = \frac{8{,}33}{\sqrt{2809{,}76}}$<br>$r_{xy} = \frac{8{,}33}{53}$<br>$r_{xy} = 0{,}157$ | **Invalid** |

| | | |
|---|---|---|
| 34. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{32}{\sqrt{(4,5)(702,44)}}$<br>$r_{xy} = \frac{32}{\sqrt{3160,98}}$<br>$r_{xy} = \frac{32}{56,22}$<br>$r_{xy} = 0,569$ | **Valid** |
| 35. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{35,11}{\sqrt{(4,27)(702,44)}}$<br>$r_{xy} = \frac{35,11}{\sqrt{2999,41}}$<br>$r_{xy} = \frac{35,11}{54,76}$<br>$r_{xy} = 0,641$ | **Valid** |
| 36. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{4,77}{\sqrt{(3,11)(702,44)}}$<br>$r_{xy} = \frac{4,77}{\sqrt{2184,58}}$<br>$r_{xy} = \frac{4,77}{46,73}$<br>$r_{xy} = 0,102$ | **Invalid** |

| | | |
|---|---|---|
| 37. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{4{,}77}{\sqrt{(3{,}11)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{4{,}77}{\sqrt{2184{,}58}}$<br>$\boldsymbol{r_{xy}} = \frac{4{,}77}{46{,}73}$<br>$\boldsymbol{r_{xy}} = 0{,}102$ | **Invalid** |
| 38. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{-6{,}55}{\sqrt{(4,44)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{-6{,}55}{\sqrt{3118{,}83}}$<br>$\boldsymbol{r_{xy}} = \frac{-6{,}55}{55{,}84}$<br>$\boldsymbol{r_{xy}} = -0{,}117$ | **Invalid** |
| 39. | $\boldsymbol{r_{xy}} = \frac{\sum \boldsymbol{xy}}{\sqrt{(\sum \boldsymbol{x^2})(\sum \boldsymbol{y^2})}}$<br>$\boldsymbol{r_{xy}} = \frac{7{,}55}{\sqrt{(0{,}94)(702{,}44)}}$<br>$\boldsymbol{r_{xy}} = \frac{7{,}55}{\sqrt{660{,}29}}$<br>$\boldsymbol{r_{xy}} = \frac{7{,}55}{25{,}69}$<br>$\boldsymbol{r_{xy}} = 0{,}293$ | **Invalid** |

| | | |
|---|---|---|
| 40. | $r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$<br>$r_{xy} = \frac{10{,}55}{\sqrt{(4{,}44)(702{,}44)}}$<br>$r_{xy} = \frac{10{,}55}{\sqrt{3118{,}83}}$<br>$r_{xy} = \frac{10{,}55}{55{,}84}$<br>$r_{xy} = 0{,}188$ | **Invalid** |

From the result of computing the try out test, the result could be seen more specific as the table below:

**Table 4.2**

**The Items of Valid and Invalid**

| Criteria | Number of Items | Total |
|---|---|---|
| **Valid** | 10, 13, 17, 18, 19, 20, 21, 23, 24, 25, 27, 28, 29, 30, 32, 34, 35 | **17** |
| **Invalid** | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 14,15,16, 22, 26, 31, 33, 36, 37, 38, 39, 40 | **23** |

The table above, it could be concluded that the trying out instrument test has 17 number items were valid and 23 items were invalid. Therefore, in order to better be the instrument of pre-test, the researcher had a way to fulfill up to 20 items valid with revise

at least 3 items were invalid in some aspects. The number of items there are number 3, 6 and, 8 changed in terms of material aspects and instrument's construction in order to become valid instrument and good to be tested.

After calculating the validity of the item test by using manual calculation, it also done by using SPSS formula. The result can be seen in appendix 1. The items test were valid when $r_{xy}>r_{table.}$ The $r_{table}$ of this research was 0,4683. Valid meant that $r_{xy}$ was higher than $r_{table}$ however invalid meant that $r_{xy}$ was lower than $r_{table.}$

### 4.1.2 The Reliability of Try Out Instrument

The instrument used by the researcher is expected to be trusted through internal reliability test. So in this research the writer used Spearman-Brown formula for manual calculation and SPSS formula, as follows:

$$\mathbf{r_{11} = \frac{2 \times r_{1/21/2}}{(1 + r_{1/21/2})}}$$

The item is reliable if $r_{11} > r_{table}$

$r_{table} = 0{,}4683$

Based on the tryout of instrument, the calculation can be seen as follows:

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

$$\mathbf{r_{xy} = \frac{18 \times 2216 - 190 \times 196}{\sqrt{(18 \times 2178 - 190^2)\,(18 \times 2370 - 196^2)}}}$$

$$\mathbf{r_{xy} = \frac{39888 - 37240}{\sqrt{(39204 - 36100)\,(42660 - 38416)}}}$$

$$\mathbf{r_{xy} = \frac{2648}{\sqrt{3104 \times 4244}}}$$

$$\mathbf{r_{xy} = \frac{2648}{\sqrt{13173376}}}$$

$$\mathbf{r_{xy} = \frac{2648}{3629{,}5}}$$

$$\mathbf{r_{xy} = 0{,}7295}$$

$$\mathbf{r_{xy} = \frac{2 \times r_{xy}}{1 + r_{xy}}}$$

$$\mathbf{r_{11} = \frac{2 \times 0{,}7295}{1 + 0{,}7295}}$$

$$\mathbf{r_{11} = \frac{1{,}459}{1{,}7295}}$$

$$\mathbf{r_{11} = 0{,}844}$$

The result of computing reliability by using divisive two initial-end of tryout instrument was 0,844. For α = 5% with N = 18, $r_{table}$ = 0,4683. From this calculation it can show that the instrument was definitely reliable. The writer continued the calculation of reliability using SPSS formula. The calculation described as follows:

**Table 4.3**

**The Reliability Computation Using SPSS Calculation**

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 18 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 18 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .809 | 40 |

Based on the data above, it showed that the reliability of instrument using SPSS formula was 0,809, with N = 18, α = 5% and $r_{table}$ = 0,4683. The item test was reliable when $r_{11} > r_{table}$. So, the instrument of the test was reliable.

## 4.2 The Data Description

In this part showed the general description of students' score in both experimental and control group. The description divided into three sections. There are the pre-test scores, the post-test scores, and the gained scores.

### 4.2.1 Students' Pre-test Scores

The pre-test conducted in experimental and control group. The pre-test has been held on November 4th 2018 and in class XII TKJ 3 as experimental group which is consisting of 26 students. Besides that, in control group the pre-test has been held on November 3rd, 2018 in XII TKJ 1 which consisted of 29 students. The data of pre-test scores showed as follows:

**Table 4.4**

**The Students' Pre-test Scores**

| Students Number | pre-test of experimental group | Students Number | pre-test of control group |
|---|---|---|---|
| 1 | 70 | 1 | 45 |
| 2 | 55 | 2 | 40 |
| 3 | 75 | 3 | 60 |
| 4 | 55 | 4 | 40 |
| 5 | 50 | 5 | 70 |
| 6 | 70 | 6 | 45 |
| 7 | 60 | 7 | 40 |
| 8 | 45 | 8 | 30 |
| 9 | 60 | 9 | 50 |
| 10 | 60 | 10 | 40 |
| 11 | 60 | 11 | 40 |
| 12 | 60 | 12 | 20 |
| 13 | 85 | 13 | 40 |
| 14 | 50 | 14 | 45 |
| 15 | 60 | 15 | 40 |

| | | | |
|---|---|---|---|
| 16 | 55 | 16 | 50 |
| 17 | 70 | 17 | 40 |
| 18 | 60 | 18 | 45 |
| 19 | 60 | 19 | 40 |
| 20 | 55 | 20 | 35 |
| 21 | 50 | 21 | 30 |
| 22 | 60 | 22 | 45 |
| 23 | 65 | 23 | 40 |
| 24 | 50 | 24 | 40 |
| 25 | 50 | 25 | 30 |
| 26 | 50 | 26 | 40 |
| | | 27 | 50 |
| | | 28 | 55 |
| | | 29 | 35 |
| ∑ | 1540 | ∑ | 1220 |
| Mean | 59,23077 | Mean | 42,0689655 |

In the table above showed students' pre-test scores of the experimental and control group. The test has been given to the students in the preliminary meeting before the researcher giving the treatment. Both the experimental group and control group had the different score. In the experimental group, the lowest score was 45 and control group was 20. The medium score of the experimental group was 65 and control group was 45. Furthermore, the highest score of the experimental group was 85 and control group was 70. Then, the mean score of the experimental group was 59,23 and the mean score of the control group was 42,06.

After conducting the pre-test, the researcher gave treatment toward students in the experimental group, but did not give treatment to the control group. Then, after the experimental group has been given treatment (Circle the Sage Strategy), and control group used conventional learning. After that both the experimental group and control group had to do the post-test.

### 4.2.2 Students' Post-test Scores

The post-test conducted in experimental and control group. The post-test has been held on November 19th, 2018 and in class XII TKJ 3 as experimental group which is consisting of 26 students. Besides that, in control group the post-test has been held on November 17th, 2018 in XII TKJ 1 which consisted of 29 students. The data of post-test scores showed as follows:

**Table 4.5**

**The Students' Post-test Scores**

| Students Number | post-test of experimental group | Students Number | post-test of control group |
|---|---|---|---|
| 1 | 90 | 1 | 55 |
| 2 | 85 | 2 | 55 |
| 3 | 90 | 3 | 75 |
| 4 | 70 | 4 | 50 |
| 5 | 90 | 5 | 75 |

| | | | |
|---|---|---|---|
| 6 | 75 | 6 | 55 |
| 7 | 90 | 7 | 55 |
| 8 | 90 | 8 | 45 |
| 9 | 90 | 9 | 50 |
| 10 | 85 | 10 | 45 |
| 11 | 90 | 11 | 55 |
| 12 | 90 | 12 | 35 |
| 13 | 90 | 13 | 55 |
| 14 | 85 | 14 | 50 |
| 15 | 75 | 15 | 45 |
| 16 | 80 | 16 | 50 |
| 17 | 90 | 17 | 40 |
| 18 | 90 | 18 | 55 |
| 19 | 90 | 19 | 50 |
| 20 | 85 | 20 | 45 |
| 21 | 90 | 21 | 45 |
| 22 | 90 | 22 | 55 |
| 23 | 90 | 23 | 55 |
| 24 | 85 | 24 | 55 |
| 25 | 90 | 25 | 45 |
| 26 | 90 | 26 | 45 |
| | | 27 | 65 |
| | | 28 | 65 |
| | | 29 | 55 |
| ∑ | 2255 | ∑ | 1525 |
| Mean | 86,7307692 | Mean | 52,5862069 |

The data above showed the post-test scores of the experimental and control group. The post-test was given in the last meeting to students after they got the treatment. Especially for students' of experimental group. For control group after conventional learning with the same materials.

The data showed that the lowest score of the experimental group was 70 and the control group was 40. The medium score of the experimental group was 75 and the control group was 57,5. Then, the highest score of the experimental group was 90 and the control group was 75. The mean of the experimental group was 87 and the control group was 52. So, it can be seen that the experimental group had higher score than the control group.

## 4.3 The Data Analysis

This section was intended to answer the research question whether Circle the Sage Strategy was effective to improve students' grammar ability in simple present tense at the twelfth grade students of SMK Roudlotul Mubtadiin Balekambang or not. The data analysis was divided into three sections; there were the data analysis of prerequisite analysis test, t-test of pre-test scores and the data analysis t-test of post-test scores.

### 4.3.1 Prerequisite Analysis Test

The Prerequisite was an analysis test aim at the truth of hypothesis which suggested in this research. Before hypothesis testing had done, it was a must to do prerequisite analysis data through homogeneity test.

Homogeneity test is used to measure the scores obtained whether it is homogeny or not. Basrowi and Soenyono (2007:106) state that the score is categorized homogeny when the significant was higher than mean significant difference at 0,05 levels. In measuring the homogeneity test, Levene statistics found in SPSS is used. The homogeneity test was used to measure students' pre-test score in control and experimental groups.

Based on the result of analyzing the data of pre-test of control and experimental groups. It was found that the significant was 0,823. It means that the sample between control group and experimental group was categorized homogeneous because the significant was higher than mean significant difference at the level 0,05. The results of homogeneity test can seen as table below:

**Table 4.6**

**The Homogeneity Test Computation Using SPSS Calculation**

**Test of Homogeneity of Variances**

Pre_test

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|

**Test of Homogeneity of Variances**

Pre_test

| Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|
| .051 | 1 | 50 | .823 |

### 4.3.2 Analysis Score of Pre-test

In this part, explain the computation of T-test pre-test by manual calculation and SPSS calculation. The table 4.7 below described the data analysis of pre-test scores of the experimental and the control groups by using SPSS. Certainly, it was important to know whether there was significance difference between experimental group and control group. Besides to answer whether the alternative hypothesis ($H_a$) was accepted or rejected**.**

**Table 4.7**

**The T-test of Pre-test Computation Using SPSS Calculation**

**Group Statistics**

| | Students | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pre_test | 1 | 26 | 59.2308 | 9.13152 | 1.79084 |
| | 2 | 29 | 42.0690 | 9.59141 | 1.78108 |

**Independent Samples Test**

| | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | |
|---|---|---|---|---|---|---|---|---|
| | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference |

| | | | | | | | | | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|---|
| Pre_test | Equal variances assumed | .001 | .977 | 6.776 | 53 | .000 | 17.16180 | 2.53264 | 12.08198 | 22.24163 |
| | Equal variances not assumed | | | 6.795 | 52.796 | .000 | 17.16180 | 2.52574 | 12.09536 | 22.22825 |

The above tables described that there was a significant difference from measurement score of the experimental and control group. Based on the result of the statistic calculation above, the score of $t_{observe}$ was 6.821. By using degree of freedom 5%, the value of 50 (the degree of significance) as stated in in the $t_{table}$ was 2.01. It meant that from the pre-test score there was a significant, because $t_{observe} > t_{table}$ ( 6.821 > 2.01 ).

Besides, the researcher also made calculation from the scores of the experimental and control group by using manual calculation. In order to see the comparison of pre test scores between the experimental group and the control group, the researcher took t-test measurement of pre-test scores both of them. Pre-test score was got by students' work result before got a treatment or have a conventional learning. Certainly, it was important to know whether there was significance difference between them besides to answer whether the alternative hypothesis (Ha) was accepted or rejected. The t-test manual calculation can be seen as follows:

**Table 4.8**

**The Comparison of Pre-test Scores of each Student in the Experimental Group and Control Group**

| Students | Pre-Exp (X) | Students | Pre-Cont (Y) | X-MX | Y-MY | $(X-MX)^2$ | $(Y-MY)^2$ |
|---|---|---|---|---|---|---|---|
| 1. | 70 | 1. | 45 | 10,76923 | 2,931034 | 115,9763 | 8,590963 |
| 2. | 55 | 2. | 40 | -4,23077 | -2,06897 | 17,89941 | 4,280618 |
| 3. | 75 | 3. | 60 | 15,76923 | 17,93103 | 248,6686 | 321,522 |
| 4. | 55 | 4. | 40 | -4,23077 | -2,06897 | 17,89941 | 4,280618 |
| 5. | 50 | 5. | 70 | -9,23077 | 27,93103 | 85,2071 | 780,1427 |
| 6. | 70 | 6. | 45 | 10,76923 | 2,931034 | 115,9763 | 8,590963 |
| 7. | 60 | 7. | 40 | 0,769231 | -2,06897 | 0,591716 | 4,280618 |
| 8. | 45 | 8. | 30 | -14,2308 | -12,069 | 202,5148 | 145,6599 |
| 9. | 60 | 9. | 50 | 0,769231 | 7,931034 | 0,591716 | 62,90131 |
| 10. | 60 | 10. | 40 | 0,769231 | -2,06897 | 0,591716 | 4,280618 |
| 11. | 60 | 11. | 40 | 0,769231 | -2,06897 | 0,591716 | 4,280618 |
| 12. | 60 | 12. | 20 | 0,769231 | -22,069 | 0,591716 | 487,0392 |
| 13. | 85 | 13. | 40 | 25,76923 | -2,06897 | 664,0533 | 4,280618 |
| 14. | 50 | 14. | 45 | -9,23077 | 2,931034 | 85,2071 | 8,590963 |
| 15. | 60 | 15. | 40 | 0,769231 | -2,06897 | 0,591716 | 4,280618 |
| 16. | 55 | 16. | 50 | -4,23077 | 7,931034 | 17,89941 | 62,90131 |
| 17. | 70 | 17. | 40 | 10,76923 | -2,06897 | 115,9763 | 4,280618 |
| 18. | 60 | 18. | 45 | 0,769231 | 2,931034 | 0,591716 | 8,590963 |
| 19. | 60 | 19. | 40 | 0,769231 | -2,06897 | 0,591716 | 4,280618 |
| 20. | 55 | 20. | 35 | -4,23077 | -7,06897 | 17,89941 | 49,97027 |
| 21. | 50 | 21. | 30 | -9,23077 | -12,069 | 85,2071 | 145,6599 |
| 22. | 60 | 22. | 45 | 0,769231 | 2,931034 | 0,591716 | 8,590963 |
| 23. | 65 | 23. | 40 | 5,769231 | -2,06897 | 33,28402 | 4,280618 |
| 24. | 50 | 24. | 40 | -9,23077 | -2,06897 | 85,2071 | 4,280618 |
| 25. | 50 | 25. | 30 | -9,23077 | -12,069 | 85,2071 | 145,6599 |
| 26. | 50 | 26. | 40 | -9,23077 | -2,06897 | 85,2071 | 4,280618 |
| | | 27. | 50 | | 7,931034 | | 62,90131 |
| | | 28. | 55 | | 12,93103 | | 167,2117 |
| | | 29. | 35 | | -7,06897 | | 49,97027 |
| ∑ | 1540 | ∑ | 1220 | -7,1E-14 | -4,3E-14 | 2084,615 | 2575,862 |
| Mean | 59,2307692 | Mean | 42,0689655 | -2,7E-15 | -1,5E-15 | 80,17751 | 88,82283 |

The procedures of calculation are as follow:

a. The mean of Variable X

$$M_x = \frac{\sum X}{N_1}$$

$$M_x = \frac{1540}{26}$$

$$M_x = 59{,}23077$$

b. The mean of Variable Y

$$M_y = \frac{\sum Y}{N_2}$$

$$M_y = \frac{1220}{29}$$

$$M_y = 42{,}068$$

c. Determining Standard of Deviation score of variable X

$$SD_1 = \sqrt{\frac{\sum X^2}{N_1}}$$

$$SD_1 = \sqrt{\frac{2084{,}615}{26}}$$

$$SD_1 = \sqrt{80{,}1775}$$

$$SD_1 = 8{,}954$$

d. Determining Standard of Deviation score of variable Y

$$SD_2 = \sqrt{\frac{\sum Y^2}{N_2}}$$

$$SD_2 = \sqrt{\frac{2575{,}862}{29}}$$

$$SD_2 = \sqrt{88{,}822}$$

$$SD_2 = 9{,}424$$

e. Determining Standard Error Mean of variable X

$$SE_{M_1} = \frac{SD_1}{\sqrt{N_1 - 1}}$$

$$SE_{M_1} = \frac{8{,}954}{\sqrt{26 - 1}}$$

$$SE_{M_1} = \frac{8{,}954}{\sqrt{25}}$$

$$SE_{M_1} = \frac{8{,}954}{5}$$

$$SE_{M_1} = 1{,}7908$$

f. Determining Standard Error Mean of variable Y

$$SE_{M_2} = \frac{SD_2}{\sqrt{N_2 - 2}}$$

$$SE_{M_2} = \frac{9{,}424}{\sqrt{29 - 1}}$$

$$SE_{M_2} = \frac{9{,}424}{\sqrt{28}}$$

$$SE_{M_2} = \frac{9{,}424}{5{,}291}$$

$$SE_{M_2} = 1{,}781$$

g. Determining Standard Error of different Mean of variable X and Mean of variable Y

$$SE_{M_1-M_2} = \sqrt{SE_{M_1}{}^2 + SE_{M_2}{}^2}$$

$$SE_{M_1-M_2} = \sqrt{(1{,}7908)^2 + (1{,}781)^2}$$

$$SE_{M_1-M_2} = \sqrt{3{,}206 + 3{,}171}$$

$$SE_{M_1-M_2} = \sqrt{6{,}377}$$

$$SE_{M_1-M_2} = 2{,}525$$

h. Determining $t_o$

$$t_o = \frac{M_1 - M_2}{SE_{M_1-M_2}}$$

$$t_o = \frac{59{,}23077 - 42{,}068}{2{,}525}$$

$$t_o = \frac{17{,}16277}{2{,}525}$$

$$t_o = 6{,}797$$

i. Determining Degrees of Freedom (df)

$$df = (N_1 + N_2) - 2$$

$$df = (26 + 29) - 2$$

$$df = (55) - 2$$

$$df = 53$$

Thus, the degree of freedom (df) was 53 and the critical value of df was 50 by using the degree of significance 5% was 2.01 and the $t_{observe}$ was 6.797. The result of the comparison between $t_{observe}$ and $t_{table}$ is 6.797 > 2.01 = $t_{observe} > t_{table}$..

### 4.3.3 Analysis Score of Post-test

In this part, explain the computation of T-test post-test by manual calculation and SPSS calculation. The table 4.9 below described the data analysis of pre-test scores of the experimental and the control groups by using SPSS. Certainly, it was important to know whether there was significance difference between experimental group and control group. Besides to answer whether the alternative hypothesis ($H_a$) was accepted or rejected**.**

**Table 4.9**

**The T-test of Post-test Computation Using SPSS Calculation**

**Group Statistics**

| | Students | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Post_test | 1 | 26 | 86.7308 | 5.64665 | 1.10740 |
| | 2 | 29 | 52.5862 | 9.02583 | 1.67605 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| Post_test | Equal variances assumed | 3.051 | .086 | 16.589 | 53 | .000 | 34.14456 | 2.05827 | 30.01619 | 38.27293 |
| | Equal variances not assumed | | | 16.997 | 47.619 | .000 | 34.14456 | 2.00885 | 30.10466 | 38.18447 |

The above tables described that there was a significant difference from measurement score of the experimental and control group. Based on the result of the statistic calculation above, the score of $t_{observe}$ was 16.997. By using degree of freedom 5%, the value of 50 (the degree of significance) as stated in in the $t_{table}$ was 2.01. It meant that from the post-test score there was a significant, because $t_{observe} > t_{table}$ ( 16.997 > 2.01 ).

Besides, the researcher also made calculation from the scores of the experimental and control group by using manual calculation. In order to see the comparison of post test scores between the experimental group and the control group, the researcher took t-test measurement of post-test scores both of them.

Post-test score was got by students' work result after got a treatment or have a conventional learning. Certainly, it was important to know whether there was significance difference between them besides to answer whether the alternative hypothesis (Ha) was accepted or rejected. The t-test manual calculation can be seen as follows:

**Table 4.10**

**The Comparison of Pre-test Scores of each Student in the Experimental Group and Control Group**

| Student | Post-Exp (X) | Students | Post-Cont (Y) | X-MX | Y-MY | (X-MX) | (Y-MY) |
|---|---|---|---|---|---|---|---|
| 1. | 90 | 1. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |
| 2. | 85 | 2. | 55 | -1,73077 | 2,413793 | 2,995562 | 5,826397 |
| 3. | 90 | 3. | 75 | 3,269231 | 22,41379 | 10,68787 | 502,3781 |
| 4. | 70 | 4. | 50 | -16,7308 | -2,58621 | 279,9186 | 6,688466 |
| 5. | 90 | 5. | 75 | 3,269231 | 22,41379 | 10,68787 | 502,3781 |
| 6. | 75 | 6. | 55 | -11,7308 | 2,413793 | 137,6109 | 5,826397 |
| 7. | 90 | 7. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |
| 8. | 90 | 8. | 45 | 3,269231 | -7,58621 | 10,68787 | 57,55054 |
| 9. | 90 | 9. | 50 | 3,269231 | -2,58621 | 10,68787 | 6,688466 |
| 10. | 85 | 10. | 45 | -1,73077 | -7,58621 | 2,995562 | 57,55054 |
| 11. | 90 | 11. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |
| 12. | 90 | 12. | 35 | 3,269231 | -17,5862 | 10,68787 | 309,2747 |
| 13. | 90 | 13. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |
| 14. | 85 | 14. | 50 | -1,73077 | -2,58621 | 2,995562 | 6,688466 |
| 15. | 75 | 15. | 45 | -11,7308 | -7,58621 | 137,6109 | 57,55054 |
| 16. | 80 | 16. | 50 | -6,73077 | -2,58621 | 45,30325 | 6,688466 |
| 17. | 90 | 17. | 40 | 3,269231 | -12,5862 | 10,68787 | 158,4126 |
| 18. | 90 | 18. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |
| 19. | 90 | 19. | 50 | 3,269231 | -2,58621 | 10,68787 | 6,688466 |
| 20. | 85 | 20. | 45 | -1,73077 | -7,58621 | 2,995562 | 57,55054 |
| 21. | 90 | 21. | 45 | 3,269231 | -7,58621 | 10,68787 | 57,55054 |
| 22. | 90 | 22. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |
| 23. | 90 | 23. | 55 | 3,269231 | 2,413793 | 10,68787 | 5,826397 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24. | 85 | 24. | 55 | -1,73077 | 2,413793 | 2,995562 | 5,826397 |
| 25. | 90 | 25. | 45 | 3,269231 | -7,58621 | 10,68787 | 57,55054 |
| 26. | 90 | 26. | 45 | 3,269231 | -7,58621 | 10,68787 | 57,55054 |
| | | 27. | 65 | | 12,41379 | | 154,1023 |
| | | 28. | 65 | | 12,41379 | | 154,1023 |
| | | 29. | 55 | | 2,413793 | | 5,826397 |
| ∑ | 2255 | ∑ | 1525 | 1,14E-13 | 4,97E-14 | 797,1154 | 2281,034 |
| Mean | 86,7307692 | Mean | 52,5862069 | 4,37E-15 | 1,72E-15 | 30,65828 | 78,65636 |

The procedures of calculation are as follow:

a. The mean of Variable X

$$M_x = \frac{\sum X}{N_1}$$

$$M_x = \frac{2255}{26}$$

$$M_x = 86{,}73$$

b. The mean of Variable Y

$$M_y = \frac{\sum Y}{N_2}$$

$$M_y = \frac{1525}{29}$$

$$M_y = 52{,}586$$

c. Determining Standard of Deviation score of variable X

$$SD_1 = \sqrt{\frac{\sum X^2}{N_1}}$$

$$SD_1 = \sqrt{\frac{797{,}1154}{26}}$$

$$SD_1 = \sqrt{30.658}$$

$$SD_1 = 5{,}536$$

d. Determining Standard of Deviation score of variable Y

$$SD_2 = \sqrt{\frac{\sum Y^2}{N_2}}$$

$$SD_2 = \sqrt{\frac{2281{,}034}{29}}$$

$$SD_2 = \sqrt{78{,}656}$$

$$SD_2 = 8{,}868$$

e. Determining Standard Error Mean of variable X

$$SE_{M_1} = \frac{SD_1}{\sqrt{N_1 - 1}}$$

$$SE_{M_1} = \frac{5{,}536}{\sqrt{26 - 1}}$$

$$SE_{M_1} = \frac{5{,}536}{\sqrt{25}}$$

$$SE_{M_1} = \frac{5{,}536}{5}$$

$$SE_{M_1} = 1{,}1072$$

f. Determining Standard Error Mean of variable Y

$$SE_{M_2} = \frac{SD_2}{\sqrt{N_2 - 2}}$$

$$SE_{M_2} = \frac{8{,}868}{\sqrt{29 - 1}}$$

$$SE_{M_2} = \frac{8{,}868}{\sqrt{28}}$$

$$SE_{M_2} = \frac{8{,}868}{5{,}291}$$

$$SE_{M_2} = 1{,}676$$

g. Determining Standard Error of different Mean of variable X and Mean of variable Y

$$SE_{M_1-M_2} = \sqrt{{SE_{M_1}}^2 + {SE_{M_2}}^2}$$

$$SE_{M_1-M_2} = \sqrt{(1{,}1072)^2 + (1{,}676)^2}$$

$$SE_{M_1-M_2} = \sqrt{1{,}225 + 2{,}808}$$

$$SE_{M_1-M_2} = \sqrt{4{,}033}$$

$$SE_{M_1-M_2} = 2{,}008$$

**h.** Determining $t_o$

$$t_o = \frac{M_1 - M_2}{SE_{M_1-M_2}}$$

$$t_o = \frac{86{,}736 - 52{,}586}{2{,}008}$$

$$t_o = \frac{34{,}15}{2{,}008}$$

$$t_o = 17{,}006$$

**i.** Determining Degrees of Freedom (df)

$$df = (N_1 + N_2) - 2$$

$$df = (26 + 29) - 2$$

$$df = (55) - 2$$

$$df = 53$$

Thus, the degree of freedom (df) was 53 and the critical value of df was 50 by using the degree of significance 5% was 2.01 and the $t_{observe}$ was 17,006. The result of the comparison between $t_{observe}$ and $t_{table}$ is 17,006 > 2,01 = $t_{observe}$ > $t_{table}$.

### 4.3.4 The Data Interpretation

In this section, the researcher described the interpretation of the research finding and summarized the hypothesis. The research was held to answer the question whether the use of Circle the Sage strategy is effective to improve students' grammar in simple present tense achievement at the twelefth grade of SMK Roudlotul Mubtadiin Balekambang or not. In order to answer the question, the researcher writes the Alternative Hypothesis (Ha) and

the Null Hypothesis (Ho) as follows: a. The Null Hypothesis (Ho): there was a significant difference of students' simple present tense achievement between who were taught through Circle the Sage Strategy and students' who were taught without Circle the Sage Strategy. The Alternative Hypothesis (Ha): there was no a significant difference of students' simple present tense achievement between who were taught through Circle the Sage Strategy and students' who were taught without Circle the Sage Strategy. To prove the hypothesis, the data obtained in experimental group and control group were calculated by using t-test formula with assumption as follows:

a. If $t_o > t_{table}$, the Null Hypothesis (Ho) was rejected and Alternative Hypothesis (Ha) was accepted. It was proven that Circle the Sage strategy was effective to improve students' grammar ability in simple present tense.
b. If $t_o < t_{table}$, the Null Hypothesis (Ho) was accepted and Alternative Hypothesis (Ha) was rejected. It was proven that Circle the Sage strategy was not effective to improve students' grammar ability in simple present tense.

Then the mean pre-test score of the experimental group was 59,23 and the control group was 42,06. After analyzed the result of pre-test score by using SPSS, the result showed that the significant of t-test was 6.821 and by using manual calculation t-test was

6,797. If this is compared with t-table on df 50 in significance 5% the value of degree was 2,01. So that, it was significant because $t_{observe} > t_{table}$ (6.821 < 2.01) by using SPSS calculation and $t_{observe} > t_{table}$ (6.797 < 2.01) by using manual calculation. This is inversely to the post-test score. Then the result of SPSS from the post-test score showed that the score of $t_{observe}$ was 16,997 and by using manual calculation was 17,006 by using degree of freedom 5%, the value of 50 (the degree of significance) as stated in the t-table was 2.01. It means that from the post-test score there is a significant high score than pre-test score, because $t_{observe} > t_{table}$ (16,997> 2.01) by using SPSS calculation and $t_{observe} > t_{table}$ (17,006 < 2.01). Clearly it can be seen that the t-test of post –test was higher than the t-test of pre-test and both of them had a same significant score but the t-test of post-test was increased than t-test of pre-test because it has been given two treatments that used Circle the Sage Strategy for learning simple present tense in experimental group. It is also supported by the average between both of the group that the result showed that the post-test scores were better than the pre-test scores.