CHAPTER IV

RESEARCH FINDING AND DISCUSSIONS

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

4.1 The calculation of trying out test

The calculation of trying out instrument was means to find out the validity and reliability of the instrument before it was used as the pre-test and post-test. This test was conducted for VIII-A class. There were twenty five as a respondent and the total questions were fourty questions. The try-out test is available in appendix 1

a. The validity of trying out test

Formula**:**

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

The item test is valid if r_{xy} are greater than r_{table} or $r_{xy} > r_{table}$. The writer calculated r_{xy} used formula above and consulted the table of r with n=25 and significance level 5% was 0,3961. To calculated validity of trying out instruments used manual calculation as follows:

Table 4.1

The Validity Computation Using Manual Calculation

No	The Value of r_{xy}	Criteria
1.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.291 - (14)(425)}{\sqrt{\{25.14 - (14)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{7275 - 5950}{\sqrt{\{350 - 196\}\{210225 - 180625\}}}$ $= \frac{1325}{\sqrt{154.29600}} = \frac{1325}{\sqrt{4558400}}$ $= \frac{1325}{2135} = 0{,}6206$	Valid
2.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.179 - (8)(425)}{\sqrt{\{25.8 - (8)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4475 - 3400}{\sqrt{\{200 - 64\}\{210225 - 180625\}}}$ $= \frac{1075}{\sqrt{136.29600}} = \frac{1075}{\sqrt{4025600}}$ $= \frac{1075}{2006{,}4} = 0{,}53579$	Valid
3.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$	

	$= \frac{25.235 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5875 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$ $= \frac{775}{\sqrt{156.29600}} = \frac{775}{\sqrt{4617600}}$ $= \frac{775}{2148,86} = 0,36066$	Invalid
4.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.287 - (14)(425)}{\sqrt{\{25.14 - (14)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{7175 - 5950}{\sqrt{\{350 - 196\}\{210225 - 180625\}}}$ $= \frac{1225}{\sqrt{154.29600}} = \frac{1225}{\sqrt{4558400}}$ $= \frac{1225}{2135,04} = 0,57376$	Valid
5.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.175 - (9)(425)}{\sqrt{\{25.9 - (9)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4375 - 3825}{\sqrt{\{225 - 81\}\{210225 - 180625\}}}$	Invalid

	$= \frac{550}{\sqrt{144.29600}} = \frac{550}{\sqrt{4262400}}$ $= \frac{550}{2064,56} = 0,2664$	
6.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.205 - (10)(425)}{\sqrt{\{25.10 - (10)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5125 - 4250}{\sqrt{\{250 - 100\}\{210225 - 180625\}}}$ $= \frac{875}{\sqrt{150.29600}} = \frac{875}{\sqrt{4440000}}$ $= \frac{875}{2107,13} = 0,41526$	Valid
7.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.194 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4850 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$ $= \frac{-250}{\sqrt{156.29600}} = \frac{-250}{\sqrt{4617600}}$ $= \frac{-250}{2148,86} = 0,1163$	Invalid
8.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$	

	$= \frac{25.306 - (16)(425)}{\sqrt{\{25.16 - (16)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{7650 - 6800}{\sqrt{\{400 - 256\}\{210225 - 180625\}}}$ $= \frac{850}{\sqrt{144.29600}} = \frac{850}{\sqrt{4262400}}$ $= \frac{850}{2064,56} = 0,41171$	Valid
9.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.171 - (8)(425)}{\sqrt{\{25.8 - (8)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4275 - 3400}{\sqrt{\{200 - 64\}\{210225 - 180625\}}}$ $= \frac{875}{\sqrt{136.29600}} = \frac{875}{\sqrt{4025600}}$ $= \frac{875}{2006,39} = 0,43611$	Valid
10.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.246 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{6150 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$	Valid

	$= \frac{1050}{\sqrt{156.29600}} = \frac{1050}{\sqrt{4617600}}$ $= \frac{1050}{2148,86} = 0,48863$	
11.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.276 - (14)(425)}{\sqrt{\{25.14 - (14)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{6900 - 5950}{\sqrt{\{350 - 196\}\{210225 - 180625\}}}$ $= \frac{950}{\sqrt{154.29600}} = \frac{950}{\sqrt{4558400}}$ $= \frac{950}{2135,04} = 0,44496$	Valid
12.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.306 - (15)(425)}{\sqrt{\{25.15 - (15)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{7650 - 6375}{\sqrt{\{375 - 225\}\{210225 - 180625\}}}$ $= \frac{1275}{\sqrt{150.29600}} = \frac{1275}{\sqrt{4440000}}$ $= \frac{1275}{2107,13} = 0,60509$	Valid
13.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$	

	$= \frac{25.268 - (13)(425)}{\sqrt{\{25.13 - (13)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{6700 - 5525}{\sqrt{\{325 - 169\}\{210225 - 180625\}}}$ $= \frac{1175}{\sqrt{156.29600}} = \frac{1175}{\sqrt{4617600}}$ $= \frac{1175}{2148,86} = 0,5468$	Valid
14.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.294 - (14)(425)}{\sqrt{\{25.14 - (14)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{7350 - 5950}{\sqrt{\{350 - 196\}\{210225 - 180625\}}}$ $= \frac{1400}{\sqrt{154.29600}} = \frac{1400}{\sqrt{4558400}}$ $= \frac{1400}{2135,04} = 0,65573$	Valid
15.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.308 - (16)(425)}{\sqrt{\{25.16 - (16)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{7700 - 6800}{\sqrt{\{400 - 256\}\{210225 - 180625\}}}$ $= \frac{900}{\sqrt{144.29600}} = \frac{900}{\sqrt{4262400}}$	Valid

	$= \frac{900}{2064,56} = 0,43593$	
16.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.233 - (11)(425)}{\sqrt{\{25.11 - (11)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5825 - 4675}{\sqrt{\{275 - 121\}\{210225 - 180625\}}}$ $= \frac{1150}{\sqrt{154.29600}} = \frac{1150}{\sqrt{4558400}}$ $= \frac{1150}{2135,04} = 0,53863$	Valid
17.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.116 - (6)(425)}{\sqrt{\{25.6 - (6)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{2900 - 2550}{\sqrt{\{150 - 36\}\{210225 - 180625\}}}$ $= \frac{350}{\sqrt{114.29600}} = \frac{350}{\sqrt{3374400}}$ $= \frac{350}{1836,95} = 0,19053$	Invalid
18.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$	

	$= \frac{25.172 - (8)(425)}{\sqrt{\{25.8 - (8)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4300 - 3400}{\sqrt{\{200 - 64\}\{210225 - 180625\}}}$ $= \frac{900}{\sqrt{136.29600}} = \frac{900}{\sqrt{4025600}}$ $= \frac{900}{2006,39} = 0,44857$	Valid
19.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.195 - (9)(425)}{\sqrt{\{25.9 - (9)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4875 - 3825}{\sqrt{\{225 - 81\}\{210225 - 180625\}}}$ $= \frac{1050}{\sqrt{144.29600}} = \frac{1050}{\sqrt{4262400}}$ $= \frac{1050}{2064,56} = 0,50858$	Valid
20.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.192 - (10)(425)}{\sqrt{\{25.10 - (10)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4800 - 4250}{\sqrt{\{250 - 100\}\{210225 - 180625\}}}$ $= \frac{550}{\sqrt{150.29600}} = \frac{550}{\sqrt{4440000}}$	Invalid

	$= \frac{550}{2107,13} = 0,26102$	
21.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.144 - (6)(425)}{\sqrt{\{25.6 - (6)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{3600 - 2550}{\sqrt{\{150 - 36\}\{210225 - 180625\}}}$ $= \frac{1050}{\sqrt{114.29600}} = \frac{1050}{\sqrt{3374400}}$ $= \frac{1050}{1836,95} = 0,5716$	Valid
22.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.162 - (7)(425)}{\sqrt{\{25.7 - (7)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4050 - 2975}{\sqrt{\{175 - 49\}\{210225 - 180625\}}}$ $= \frac{1075}{\sqrt{126.29600}} = \frac{1075}{\sqrt{3729600}}$ $= \frac{1075}{1931,22} = 0,55664$	Valid
23.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.145 - (6)(425)}{\sqrt{\{25.6 - (6)^2\}\{25.8409 - (425)^2\}}}$	

	$= \frac{3625 - 2550}{\sqrt{\{150 - 36\}\{210225 - 180625\}}}$ $= \frac{1075}{\sqrt{114.29600}} = \frac{1075}{\sqrt{3374400}}$ $= \frac{1075}{1836,95} = 0,58521$	Valid
24.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.243 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{6075 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$ $= \frac{975}{\sqrt{156.29600}} = \frac{975}{\sqrt{4617600}}$ $= \frac{975}{2148,86} = 0,45373$	Valid
25.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.151 - (8)(425)}{\sqrt{\{25.8 - (8)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{3775 - 3400}{\sqrt{\{200 - 64\}\{210225 - 180625\}}}$ $= \frac{375}{\sqrt{136.29600}} = \frac{375}{\sqrt{4025600}}$ $= \frac{375}{2006,39} = 0,1869$	Invalid

26.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.93 - (7)(425)}{\sqrt{\{25.7 - (7)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{2325 - 2975}{\sqrt{\{175 - 49\}\{210225 - 180625\}}}$ $= \frac{-650}{\sqrt{126.29600}} = \frac{-650}{\sqrt{3729600}}$ $= \frac{-650}{1931,22} = -0,3366$	Invalid
27.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.122 - (7)(425)}{\sqrt{\{25.7 - (7)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{3050 - 2975}{\sqrt{\{175 - 49\}\{210225 - 180625\}}}$ $= \frac{75}{\sqrt{126.29600}} = \frac{75}{\sqrt{3729600}}$ $= \frac{75}{1931,22} = 0,03884$	Invalid
28.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.212 - (11)(425)}{\sqrt{\{25.11 - (11)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5300 - 4675}{\sqrt{\{275 - 121\}\{210225 - 180625\}}}$ $= \frac{625}{\sqrt{154.29600}} = \frac{625}{\sqrt{4558400}}$	Invalid

	$= \frac{625}{2135,04} = 0,29273$	
29.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.265 - (15)(425)}{\sqrt{\{25.15 - (15)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{6625 - 6375}{\sqrt{\{375 - 225\}\{210225 - 180625\}}}$ $= \frac{250}{\sqrt{150.29600}} = \frac{250}{\sqrt{4440000}}$ $= \frac{250}{2107,13} = 0,11864$	Invalid
30.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.209 - (10)(425)}{\sqrt{\{25.10 - (10)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5225 - 4250}{\sqrt{\{250 - 100\}\{210225 - 180625\}}}$ $= \frac{975}{\sqrt{150.29600}} = \frac{975}{\sqrt{4440000}}$ $= \frac{975}{2107,13} = 0,46271$	Valid
31.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.212 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$	

	$= \frac{5300 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$ $= \frac{200}{\sqrt{156.29600}} = \frac{200}{\sqrt{4617600}}$ $= \frac{200}{2148,86} = 0,09307$	Invalid
32.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.205 - (10)(425)}{\sqrt{\{25.10 - (10)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5125 - 4250}{\sqrt{\{250 - 100\}\{210225 - 180625\}}}$ $= \frac{875}{\sqrt{150.29600}} = \frac{875}{\sqrt{4440000}}$ $= \frac{875}{2107,13} = 0,41526$	Valid
33.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.223 - (14)(425)}{\sqrt{\{25.14 - (14)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5575 - 5950}{\sqrt{\{350 - 196\}\{210225 - 180625\}}}$ $= \frac{-375}{\sqrt{154.29600}} = \frac{-375}{\sqrt{4558400}}$ $= \frac{-375}{2135,04} = -0,1756$	Invalid

34.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.215 - (10)(425)}{\sqrt{\{25.10 - (10)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5375 - 4250}{\sqrt{\{250 - 100\}\{210225 - 180625\}}}$ $= \frac{1125}{\sqrt{150.29600}} = \frac{1125}{\sqrt{4440000}}$ $= \frac{1125}{2107,13} = 0,5339$	Valid
35.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.182 - (11)(425)}{\sqrt{\{25.11 - (11)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{4550 - 4675}{\sqrt{\{275 - 121\}\{210225 - 180625\}}}$ $= \frac{-125}{\sqrt{154.29600}} = \frac{-125}{\sqrt{4558400}}$ $= \frac{-125}{2135,04} = -0,0585$	Invalid
36.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.342 - (18)(425)}{\sqrt{\{25.18 - (18)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{8550 - 7650}{\sqrt{\{450 - 324\}\{210225 - 180625\}}}$	Valid

	$= \frac{900}{\sqrt{126.29600}} = \frac{900}{\sqrt{3729600}}$ $= \frac{900}{1931,22} = 0,46603$	
37.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.246 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{6150 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$ $= \frac{1050}{\sqrt{156.29600}} = \frac{1050}{\sqrt{4617600}}$ $= \frac{1050}{2148,86} = 0,48863$	Valid
38.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.101 - (4)(425)}{\sqrt{\{25.4 - (4)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{2525 - 1700}{\sqrt{\{100 - 16\}\{210225 - 180625\}}}$ $= \frac{825}{\sqrt{84.29600}} = \frac{825}{\sqrt{2486400}}$ $= \frac{825}{1576,83} = 0,5232$	Valid
39.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$	

	$= \frac{25.49 - (2)(425)}{\sqrt{\{25.2 - (2)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{1225 - 850}{\sqrt{\{50 - 4\}\{210225 - 180625\}}}$ $= \frac{375}{\sqrt{46.29600}} = \frac{375}{\sqrt{1361600}}$ $= \frac{375}{1166,88} = 0,32137$	Invalid
40.	$r_{xy} = \frac{N\Sigma XY - (\Sigma X)(\Sigma Y)}{\sqrt{\{N\Sigma X^2 - (\Sigma X)^2\}\{N\Sigma Y^2 - (\Sigma Y)^2\}}}$ $= \frac{25.239 - (12)(425)}{\sqrt{\{25.12 - (12)^2\}\{25.8409 - (425)^2\}}}$ $= \frac{5975 - 5100}{\sqrt{\{300 - 144\}\{210225 - 180625\}}}$ $= \frac{875}{\sqrt{156.29600}} = \frac{875}{\sqrt{4617600}}$ $= \frac{875}{2148,86} = 0,40719$	Valid

Based on the computation of all items, there were 14 items which are invalid on tryout test for pretest. Those were the item number 3, 5, 7, 17, 20, 25, 26, 27, 28, 29, 31, 33, 35 and 39. Therefore, the other items would be used in the test. Since there were 26 valid items, the writer used only 20 items for pre-test and post-test.

After analyzing the validity of trying out test by manual calculation, the writer also applied SPSS 16.0 to analyzing the validity of

trying out test. The result of analyzing the validity of trying out test using SPSS 16.0 Program was same of the manual calculation the total valid was 26 items and invalid was 14 items. The result of analyzing the validity of trying out test using SPSS 16.0 Program could be seen in appendix 2.

b. The Reliability of Trying Out Instrument

The item test is reliable when $r_{11} > r_{table}$.To calculated reliability of trying out instruments used manual calculation as follows:

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

$$r_{11} = \left(\frac{40}{40-1}\right)\left(1 - \frac{17(40-17)}{40.49{,}3333}\right)$$

$$r_{11} = \left(\frac{40}{39}\right)\left(1 - \frac{17(23)}{1973{,}33}\right)$$

$$r_{11} = (1{,}02564)\left(1 - \frac{391}{1973{,}33}\right)$$

$$r_{11} = (1{,}02564)(1 - 0{,}198142)$$

$$r_{11} = (1{,}02564)(0{,}801856)$$

$$r_{11} = 0{,}82242$$

Based on the manual calculation above, it was found r_{11} was 0,822 and r_{table} same of the validity item was 0,3961. Clearly, it can be seen that r_{11} the was greater than r_{table} or 0,822 > 0,3961. It means that the instrument of the trying out test was reliable.

After analyzing the reliability of trying out test by manual calculation, the writer also applied SPSS 16.0 to analyzing the reliability

of trying out test. The result of analyzing the validity of trying out test using SPSS 16.0 Program could be seen as follows:

Table 4.2
The Realibility ComputationUsing SPSS Calculation

		N	%
Cases	Valid	25	100.0
	Excluded[a]	0	.0
	Total	25	100.0

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

Table 4.3
Realibility Statistic

Cronbach's Alpha	N of Items
.831	40

Based on the table above from the SPSS calculation, it was found that in Cronbach's Alpha was 0,831. The item test is reliable when $r_{11} > r_{table}$. Clearly, it can be seen that the Cronbach's Alpha was greater than r_{table} or 0,831 > 0,3961. It means that the instrument of the trying out test was reliable.

4.2 Description of Data Analysis

In this section, the data analysis described the obtained data of the effectiveness of team pair solo technique to improve reading comprehension

of narrative text at the grade eight students MTs Sabilul Ulum Mayong. The presented data consisted of pre-test score experiment and control class and also post-test score experiment and control class.

a. Pre-test score experiment and control class

The pre-test in experimental class was conducted on Monday 23^{rd} July 2018 in the VIII-C class and the pretest in control class was conducted on Wednesday 25^{th} July 2018 in the VIII-E class. The pre-test was given before the treatments in both classes, experimental and control class. The pre-test score of experimental and control class as follows:

Table 4.4

Pre-test score experiment and control class

Students	Pre-test	
	Experimental	Control
S-1	40	60
S-2	45	50
S-3	50	50
S-4	45	35
S-5	60	40
S-6	50	45
S-7	65	35
S-8	40	55
S-9	60	55
S-10	45	60
S-11	45	45
S-12	55	60
S-13	60	60
S-14	55	55
S-15	40	55
S-16	55	50
S-17	50	50
S-18	50	50

S-19	50	45
S-20	40	55
S-21	70	60
S-22	55	55
S-23	70	65
S-24	45	55
S-25	55	55
S-26	45	65
S-27	45	55
S-28	45	45
S-29	50	50
S-30	55	55
S-31	45	55
S-32	45	45
Total	**1625**	**1670**
Mean	**50.78125**	**52.1875**

As a result, the researcher concluded that the result of pretest in experimental class was slightly differences from the control class.

b. Post-test score experiment and control class

The post-test in experimental class was conducted on Thursday 2^{nd} August 2018 in the VIII-C class and the pretest in control class was conducted on Saturday 4^{th} August 2018 in the VIII-E class. The post-test was given after conducting treatments in both classes, experimental and control class. The schedule of was given treatments in experimental and control class as follow in (appendix 2). The post-test score of experimental and control class as follows:

Table 4.5

Post-test score experiment and control class

Students	Post-test	
	Experimental	Control
S-1	60	75
S-2	55	50
S-3	60	45
S-4	60	40
S-5	80	40
S-6	60	50
S-7	80	45
S-8	60	60
S-9	75	60
S-10	60	65
S-11	55	60
S-12	70	75
S-13	85	65
S-14	75	65
S-15	40	55
S-16	65	60
S-17	70	45
S-18	70	50
S-19	75	55
S-20	45	60
S-21	85	55
S-22	65	70
S-23	90	70
S-24	60	65
S-25	70	50
S-26	70	60
S-27	75	65
S-28	60	60
S-29	75	65
S-30	60	70
S-31	50	60
S-32	60	50
Total	**2120**	**1860**
Mean	**66.25**	**58.125**

As a result, the researcher concluded that the result of pretest in experimental class was differences from the control class. The mean of the post-test experimental class was greater than post-test control class.

c. Gained score of pre-test and post-test experimental and control class.

After gotten the score of pre-test and post-test in experimental and control class, the researcher found that a gained score. The gained score of pre-test and post-test in experimental and control class as follows:

Table 4.6

Gained score of pre-test and post-test experimental and control class.

Students	Experiment Class			Control Class		
	Pre-test	Post-test	Gained	Pre-test	Post-test	Gained
S-1	40	60	20	60	75	15
S-2	45	55	10	50	50	0
S-3	50	60	10	50	45	-5
S-4	45	60	15	35	40	5
S-5	60	80	20	40	40	0
S-6	50	60	10	45	50	5
S-7	65	80	15	35	45	10
S-8	40	60	20	55	60	5
S-9	60	75	15	55	60	5
S-10	45	60	15	60	65	5
S-11	45	55	10	45	60	15
S-12	55	70	15	60	75	15
S-13	60	85	25	60	65	5
S-14	55	75	20	55	65	10
S-15	40	40	0	55	55	0
S-16	55	65	10	50	60	10
S-17	50	70	20	50	45	-5
S-18	50	70	20	50	50	0
S-19	50	75	25	45	55	10

S-20	40	45	5	55	60	5
S-21	70	85	15	60	55	-5
S-22	55	65	10	55	70	15
S-23	70	90	20	65	70	5
S-24	45	60	15	55	65	10
S-25	55	70	15	55	50	-5
S-26	45	70	25	65	60	-5
S-27	45	75	30	55	65	10
S-28	45	60	15	45	60	15
S-29	50	75	25	50	65	15
S-30	55	60	5	55	70	15
S-31	45	50	5	55	60	5
S-32	45	60	15	45	50	5
Total	**1625**	**2120**	**495**	**1670**	**1860**	**190**
Mean	**50.78125**	**66.25**		**52.1875**	**58.125**	

4.3 Data analysis

To test hypothesis of the study, the writer used two styles. There were manual statistical and SPSS 16.0. the used of manual statistical was t-test formula to find the empirical evidence statistically and to make the testing of hypothesis easier. The experimental class was x variable and the control class was y variable.

The t-test formula as follows:

$$t = \frac{Mx - My}{\sqrt{\left(\frac{\Sigma x^2 + \Sigma y^2}{Nx + Ny - 2}\right)\left(\frac{1}{Nx} + \frac{1}{Ny}\right)}}$$

Table 4.7

The gained score of experimental and control class

Nomor	Students	X	Y	x2	y2
1.	S-1	20	15	400	225
2.	S-2.	10	0	100	0

3.	S-3.	10	-5	100	25
4.	S-4.	15	5	225	25
5.	S-5.	20	0	400	0
6.	S-6.	10	5	100	25
7.	S-7.	15	10	225	100
8.	S-8.	20	5	400	25
9.	S-9.	15	5	225	25
10.	S-10.	15	5	225	25
11.	S-11.	10	15	100	225
12.	S-12.	15	15	225	225
13.	S-13.	25	5	625	25
14.	S-14.	20	10	400	100
15.	S-15.	0	0	0	0
16.	S-16.	10	10	100	100
17.	S-17.	20	-5	400	25
18.	S-18.	20	0	400	0
19.	S-19.	25	10	625	100
20.	S-20.	5	5	25	25
21.	S-21.	15	-5	225	25
22.	S-22.	10	15	100	225
23.	S-23.	20	5	400	25
24.	S-24.	15	10	225	100
25.	S-25.	15	-5	225	25
26.	S-26.	25	-5	625	25
27.	S-27.	30	10	900	100
28.	S-28.	15	15	225	225
29.	S-29.	25	15	625	225
30.	S-30.	5	15	25	225
31.	S-31.	5	5	25	25
32.	S-32.	15	5	225	25

Σ	**32**	**495**	**190**	**9125**	**2550**

1. The writer determined means of score in experiment class

$$Mx = (\frac{\Sigma x}{Nx})$$

$$Mx = (\frac{495}{32})$$

$$Mx = 15{,}46875$$

2. The writer determined means of score in control class

$$My = (\frac{\Sigma y}{Ny})$$

$$My = (\frac{190}{32})$$

$$My = 5{,}9375$$

3. Determining standard deviation of experiment class

$$\Sigma x^2 = \Sigma X^2 - \frac{(\Sigma x)^2}{Nx}$$

$$\Sigma x^2 = 9125 - \frac{(495)^2}{32}$$

$$\Sigma x^2 = 9125 - \frac{245025}{32}$$

$$\Sigma x^2 = 9125 - 7657{,}031$$

$$\Sigma x^2 = 1467{,}969$$

4. Determining standard deviation of control class

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

$$\Sigma y^2 = 2550 - \frac{(190)^2}{32}$$

$$\Sigma y^2 = 2550 - \frac{36100}{32}$$

$$\Sigma y^2 = 2550 - 1128{,}125$$

$$\Sigma y^2 = 1421{,}875$$

5. Determining value of hypothesis testing

$$t = \frac{Mx - My}{\sqrt{\left(\frac{\Sigma x^2 + \Sigma y^2}{Nx + Ny - 2}\right)\left(\frac{1}{Nx} + \frac{1}{Ny}\right)}}$$

$$t = \frac{15{,}46875 - 5{,}9375}{\sqrt{\left(\frac{1467{,}969 + 1421{,}875}{32 + 32 - 2}\right)\left(\frac{1}{32} + \frac{1}{32}\right)}}$$

$$t = \frac{9{,}53125}{\sqrt{\left(\frac{1467{,}969 + 1421{,}875}{32 + 32 - 2}\right)\left(\frac{1}{32} + \frac{1}{32}\right)}}$$

$$t = \frac{9{,}53125}{\sqrt{\left(\frac{2889{,}844}{62}\right)\left(\frac{2}{32}\right)}}$$

$$t = \frac{9{,}53125}{\sqrt{(46{,}61038)(0{,}0625)}}$$

$$t = \frac{9{,}53125}{\sqrt{2{,}913149}}$$

$$t = \frac{9{,}53125}{1{,}706795}$$

$$t = 5{,}584297$$

6. Determining Degree of Freedom

$$df = Nx + Ny - 2$$

$$df = 32 + 32 - 2$$

$$df = 62$$

Based on the result of hypothesis in manual calculation, it was found that the value of t-observe was 5,584 and the value of degree of freedom was 62 at the degree of significance 5% was 2. Clearly, it can be seen that the value of t-observe was greater than the value of t-table at 5% significance level or 5,584>2. It means that ha was accepted and ho was rejected.

After analyzing the t-test score in the experimental and controlled class by manual calculation, the writer also applied SPSS 16.0 to calculated t-test in testing hypothesis of the study. The result of t-test using SPSS 16.0 program could be seen as follows:

Table 4.8

Mean, Standard Deviation, and Standard Error Mean of Experimental and Control Class using SPSS 16.0 Program

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Score	Experimental Class	32	15.47	6.881	1.216
	Control Class	32	5.94	6.773	1.197

The table showed the result of mean of experimental class was 15,47, standard deviation was 6,881, and standard error of mean was 1,216. The result of mean control class was 32, standard deviation was 6,773, and standard error of mean was 1,197.

Table 4.9

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
Score	Equal variances assumed	.044	.834	5.584	62	.000	9.531	1.707	6.119	12.943
	Equal variances not assumed			5.584	61.984	.000	9.531	1.707	6.119	12.943

Based on the table above, it was found that the sig. (2-tailed) was 0,000 with df = 62, t-table of df 62 at significance 5% was 2, and t-observe was 5,584. Clearly, it can be seen that the value of t-observe was greater than the value of t-table at 5% significance level or 5,584 > 2 and the sig. (2-tailed) was lower than 0,05 or 0,000 < 0,05. It means that the null hypothesis (ho) was rejected, and the alternative hypothesis (Ha) was accepted. It could be interpreted based on the result of calculating that ha stating that there was significance difference between students who were taught by using of team pair solo in reading comprehension of narrative text than the students who are not taught by using team pair solo. So used team pair solo technique was

effective to improve of reading comprehension of narrative test of the eighth grade students at MTs Sabilul Ulum Mayong.

4.4 Discussion

The result of students' reading comprehension improvement could be seen of the mean the gained score of pre-test and post-test in experimental and control class. The mean of the gained score in experimental class was 15,44 and the mean of the gained score in control class was 5,445. It means that the experimental class is getting higher than control class.

The researcher used t-test to test the hypothesis and know the significance of the experimental and control group. It can be seen from the statistical SPSS 16.0 Program it was found that the sig. (2-tailed) was 0,000 with df = 62, t-table of df 62 at significance 5% was 2, and t-observe was 5,584. Clearly, it can be seen that the value of t-observe was greater than the value of t-table at 5% significance level or 5,584 > 2 and the sig. (2-tailed) was lower than 0,05 or 0,000 < 0,05. It means that the null hypothesis (ho) was rejected, and the alternative hypothesis (Ha) was accepted. It could be interpreted based on the result of calculating that (ha) stating that there is significance difference between students who were taught by using of team pair solo in reading comprehension of narrative text than the students who are not taught by using team pair solo and (ho) stating that there is no a significant difference between students who are taught by using Team Pair Solo in

reading comprehension of narrative text than students who are not taught by using team pair solo.

From the result of the research, it can be concluded that the use team pair solo technique is effective to improve reading comprehension of narrative text of the eighth grade students at MTs Sabilul Ulum Mayong in the academic year 2018/2019.