CHAPTER – 6

ANALYSES OF DATA

AND

INTERPRETATIONS
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ANALYSIS OF DATA AND INTERPRETATIONS

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6.1 INTRODUCTION

Investigator generally tries to reach to the findings following the steps of research work. The analysis of data is an important process that empirically supports the experiment carried out by the researcher. Data collection processes are predetermined and functions parallel to the research objectives. Data analysis and interpretation covers only the required and relevant information to be used for the generalizations.

Information flow collected out of administration of required test should have a systematic tabulation, schedules and graphs along with the computational work done by the researcher. The research endeavors to follows the principle of good presentation which convinces the reader in the most logical way. The analysis of data gives the synoptic view of the procedures in a most concise and meaningful way. The analysis itself speaks about the data in the most systematic way. Analysis should be in a gradual manner. The generation of hypothesis and testing of hypothesis, both are very important points of the research. Investigator also indicates the related aspects of test construction including item acceptance or rejection at the appropriate place in the research report. In this chapter, the important analysis of the data is presented along with interpretations of each data.

6.2 RESEARCH DESIGN

In the present study investigator had selected One-group pretest-posttest design. Metacognitive thinking programme was given to students and metacognitive thinking inventory were administered as a pre-test and post-test to find out effectiveness of the programme. The detailed research design was discussed in chapter 4.

6.3 ANALYSIS OF PRE-TEST AND POST-TEST DATA

Metacognitive thinking inventory standardized by the Dr.R.S.Patel were used as a pre-test and post-test for finding out effectiveness of metacognitive thinking programme. Metacognitive thinking inventory were administered on 52 students of standard-9 of Anand High School, Anand and thus data was obtained for pre-test and post-test.

6.4 HYPOTHESE TESTING AND ITS INTERPRETATION

Metacognitive thinking inventory developed by Dr.R.S.Patel was used as pre-test and post-test for finding out effectiveness of metacognitive thinking programme.
Effectiveness of metacognitive thinking programme was found with reference to certain variables like gender, SES and IQ. Descriptive statistics of pre-test and post-test data were computed. To test the hypotheses, a t-test was computed. Details of hypotheses testing are given below.

### 6.3.1 Hypothesis – 1

There will be no significant difference between the mean scores of metacognitive thinking for pre-test and post-test.

To study the effect of metacognitive thinking inventory was used as pre-test and post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.1

#### Table 6.1

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>52</td>
<td>127.77</td>
<td>15.94</td>
<td>8.66</td>
<td>0.01</td>
</tr>
<tr>
<td>Post-Test</td>
<td>52</td>
<td>150.64</td>
<td>10.43</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test and Post-test data is shown in Graph 6.1

It can be observed from the above table – 6.1 that
Histogram for Pre-test and Post-test data for Boys is shown in Graph 6.2

It can be observed from the above table – 6.2 that

1. Mean score and S.D. of pre-test score are 138.89 and 14.11 respectively and that of post-test score are 159.89 and 9.53 respectively for boys.

2. Obtained t-ratio is 6.52, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 2 “There will be no significant difference between the mean scores of metacognitive thinking of boys for pre-test and post-test.” is rejected at 0.01 level of confidence. So the alternate research hypothesis, “The mean score of metacognitive thinking of boys for post-test would be higher than pre-test” was accepted. Thus, metacognitive thinking programme was found effective for boys.

**6.3.3 Hypothesis - 3**

There will be no significant difference between the mean scores of metacognitive thinking of girls for pre-test and post-test.

To study the effect of metacognitive thinking programme on girls, metacognitive thinking inventory was used as pre-test and post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.3
Table 6.3

Descriptive statistics For Pre-test and Post-test data for Girls

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>24</td>
<td>127.92</td>
<td>17.03</td>
<td>6.21</td>
<td>0.01</td>
</tr>
<tr>
<td>Post-Test</td>
<td>24</td>
<td>155.5</td>
<td>13.53</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test and Post-test data for Girls is shown in Graph 6.3

It can be observed from the above table – 6.3 that

1. Mean score and S.D. of pre-test score are 127.92 and 17.03 respectively and that of post-test score are 155.5 and 13.53 respectively for girls.

2. Obtained t-ratio is 6.21, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 3 “There will be no significant difference between the mean scores of metacognitive thinking of girls for pre-test and post-test.” is rejected at 0.01 level of confidence. So the alternate research hypothesis, “The mean score of metacognitive thinking of girls for post-test would be higher than pre-test” was accepted. Thus, metacognitive thinking programme was found effective for girls.

6.3.4 Hypothesis – 4

There will be no significant difference between the mean scores of metacognitive thinking for boys and girls in pre-test.
To compare the effect of metacognitive thinking programme on boys and girls, metacognitive thinking inventory was used as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.4

Table 6.4
Descriptive statistics For Pre-test data for Boys and Girls

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>28</td>
<td>123</td>
<td>17.26</td>
<td>1.05</td>
<td>NS</td>
</tr>
<tr>
<td>Girls</td>
<td>24</td>
<td>118.13</td>
<td>16.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for Boys and Girls is shown in Graph 6.4

It can be observed from the above table – 6.4 that
1. Mean score and S.D. of Pre-test score are 123 and 17.26 respectively and that of Post-test Score are 118.13 and 16.31 respectively.
2. Obtained t-ratio is 1.05, which is not significant at any level of confidence.

Therefore, Hypothesis – 4 “There will be no significant difference between the mean scores of metacognitive thinking for boys and girls in pre-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls.
6.3.5 Hypothesis - 5

There will be no significant difference between the mean scores of metacognitive thinking for boys and girls in post-test.

To compare the effect of metacognitive thinking programme on boys and girls, metacognitive thinking inventory was used as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.5

Table 6.5
Descriptive statistics For Post-test data for Boys

<table>
<thead>
<tr>
<th>Post-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Boys)</td>
<td>28</td>
<td>159.89</td>
<td>9.53</td>
<td>1.33</td>
<td>NS</td>
</tr>
<tr>
<td>(Girls)</td>
<td>24</td>
<td>155.5</td>
<td>13.53</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Post-test data is shown in Graph 6.5

Graph 6.5 Histogram for Post-test Data in Boys and Girls

It can be observed from the above table – 6.5 that

1. Mean score and S.D. of post-test score for boys are 159.89 and 9.53 respectively and that of girls are 155.5 and 13.53 respectively.

2. Obtained t-ratio is 1.33, which is not significant at any level of confidence.
Therefore, Hypothesis – 5 “There will be no significant difference between the mean scores of metacognitive thinking for boys and girls in post-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls.

6.3.6 Hypothesis – 6
There will be no significant difference between the mean scores of metacognitive thinking of students having High SES and Low SES in pre-test.

To study the effect of SES on score obtained by students on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.6

<table>
<thead>
<tr>
<th>Table 6.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive statistics For Pre-test for High SES and Low SES data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SES</td>
<td>14</td>
<td>153.29</td>
<td>3.54</td>
<td>10.72</td>
<td>NS</td>
</tr>
<tr>
<td>Low SES</td>
<td>14</td>
<td>110.71</td>
<td>14.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for High SES and Low SES Students is shown in Graph 6.6

Graph 6.6 Histogram for Pre-test data for High SES and Low SES Students
It can be observed from the above table – 6.6 that

1. Mean score and S.D. of pre-test score are 153.29 and 3.54 respectively and that of post-test score are 110.71 and 14.44 respectively.

2. Obtained t-ratio is 10.72, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 6 “There will be no significant difference between the mean scores of metacognitive thinking of students having High SES and Low SES in pre-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having High SES would be higher than Low SES for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for students having High SES.

6.3.7 Hypothesis – 7

There will be no significant difference between the mean scores of metacognitive thinking of students having High SES and Low SES in post-test.

To study the effect of SES on score obtained by students on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.7

Table 6.7

<table>
<thead>
<tr>
<th>Post-test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SES</td>
<td>14</td>
<td>169.71</td>
<td>1.98</td>
<td>14.28</td>
<td>0.01</td>
</tr>
<tr>
<td>Low SES</td>
<td>14</td>
<td>144.29</td>
<td>6.35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Histogram for Post-test data for High SES and Low SES Students is shown in

Graph 6.7

Graph 6.7 Histogram for Post-test data for High SES and Low SES Students

It can be observed from the above table – 6.7 that

1. Mean score and S.D. of post-test score for High SES are 169.71 and 1.98
respectively and that of Low SES are 144.29 and 6.35 respectively.

2. Obtained t-ratio is 14.28, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 7 “There will be no significant difference between the
mean scores of metacognitive thinking of students having High SES and Low SES in
post-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The
mean score of metacognitive thinking of students having High SES would be higher
than Low SES for post-test” was accepted. Thus, metacognitive thinking programme
was found more effective for students having High SES.

6.3.8 Hypothesis – 8

There will be no significant difference between the mean scores of Metacognitive
thinking of boys having High SES and Low SES in pre-test.

To study the effect of SES on score obtained by boys on metacognitive
thinking inventory, SES scale was used along with metacognitive thinking inventory
as pre-test to obtain data and descriptive statistics and t-test were computed. Results
of descriptive statistics and t-test are presented in Table – 6.8
It can be observed from the above table – 6.8 that

1. Mean score and S.D. of pre-test score for High SES boys are 153.71 and 3.55 respectively and that of pre-test score for Low SES boys are 110.57 and 17.86 respectively.

2. Obtained t-ratio is 6.27, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 8 “There will be no significant difference between the mean scores of metacognitive thinking of boys having High SES and Low SES in pre-test” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of boys having High SES would be higher than Low
SES for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for boys having High SES.

**6.3.9 Hypothesis – 9**

There will be no significant difference between the mean scores of Metacognitive thinking of boys having High SES and Low SES in post-test.

To study the effect of SES on score obtained by boys on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.9

**Table 6.9**

Descriptive statistics For Post-test data for High SES and Low SES Boys

<table>
<thead>
<tr>
<th>Post-Test (Boys)</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SES</td>
<td>7</td>
<td>170.29</td>
<td>2.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low SES</td>
<td>7</td>
<td>147</td>
<td>6.00</td>
<td>9.58</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Histogram for Post-test data for High SES and Low SES Boys is shown in Graph 6.9

Graph 6.9 Histogram for Post-test data for High SES and Low SES Boys
It can be observed from the above table – 6.9 that

1. Mean score and S.D. of post-test score for High SES boys are 170.29 and 2.14 respectively and that of post-test Score for Low SES boys are 147 and 6.00 respectively.

2. Obtained t-ratio is 9.58, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 9 “There will be no significant difference between the mean scores of metacognitive thinking of boys having High SES and Low SES in post-test” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of boys having High SES would be higher than Low SES for post-test” was accepted. Thus, metacognitive thinking programme was found more effective for boys having High SES.

6.3.10 Hypothesis - 10

There will be no significant difference between the mean scores of metacognitive thinking of girls having High SES and Low SES in pre-test.

To study the effect of SES on score obtained by girls on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.10

| Table 6.10 |
| Descriptive statistics For Pre-test data for High SES and Low SES |

<table>
<thead>
<tr>
<th>Girls</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SES</td>
<td>7</td>
<td>139.07</td>
<td>7.35</td>
<td>3.81</td>
<td>0.01</td>
</tr>
<tr>
<td>Low SES</td>
<td>7</td>
<td>119.86</td>
<td>13.46</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It can be observed from the above table – 6.10 that

1. Mean score and S.D. of pre-test score for High SES girls are 139.07 and 7.35 respectively and that of pre-test Score for Low SES girls are 119.86 and 13.46 respectively.

2. Obtained t-ratio is 3.81, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 10 “There will be no significant difference between the mean scores of metacognitive thinking of girls having High SES and Low SES in pre-test” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of girls having High SES would be higher than Low SES for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for girls having High SES.

6.3.11 Hypothesis - 11

There will be no significant difference between the mean scores of metacognitive thinking of girls having High SES and Low SES in post-test.

To study the effect of SES on score obtained by girls on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.11
Table 6.11
Descriptive statistics For Post-test data for High SES and Low SES Girls

<table>
<thead>
<tr>
<th>Post-Test (Girls)</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SES</td>
<td>7</td>
<td>167</td>
<td>2.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low SES</td>
<td>7</td>
<td>140.43</td>
<td>3.1</td>
<td>18.20</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Histogram for Post-test data for High SES and Low SES Girls is shown in Graph 6.11

It can be observed from the above table – 6.11 that

1. Mean score and S.D. of post-test score for High SES girls are 167 and 2.31 respectively and that of post-test score for Low SES girls are 140.43 and 3.10 respectively.

2. Obtained t-ratio is 18.20, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 11 “There will be no significant difference between the mean scores of metacognitive thinking of girls having High SES and Low SES in post-test” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of girls having High SES would be higher than
Low SES for post-test” was accepted. Thus, metacognitive thinking programme was found more effective for girls having High SES.

6.3.12 Hypothesis – 12

There will be no significant difference between the mean scores of metacognitive thinking of students having High SES in pre-test.

To study the effect of High SES on score obtained by boys and girls on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.12

<table>
<thead>
<tr>
<th>Pre-Test (High SES)</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High SES (Boys)</td>
<td>7</td>
<td>153.7</td>
<td>3.55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High SES (Girls)</td>
<td>7</td>
<td>152.86</td>
<td>3.76</td>
<td>0.32</td>
<td>NS</td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for High SES Students is shown in Graph 6.12

It can be observed from the above table – 6.12 that
1. Mean score and S.D. of pre-test score for High SES boys are 153.7 and 3.55 respectively and that of High SES girls are 152.86 and 3.76 respectively.

2. Obtained t-ratio is 0.32, which is not significant at any level of confidence.

Therefore, Hypothesis – 12 “There will be no significant difference between the mean scores of metacognitive thinking of students having High SES in pre-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls.

6.3.13 Hypothesis - 13

There will be no significant difference between the mean scores of metacognitive thinking of students having High SES in post-test.

To study the effect of High SES on score obtained by boys and girls on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.13

<table>
<thead>
<tr>
<th>Table 6.13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive statistics For Post-test data for High SES Students</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Histogram for Post-test data for High SES Students is shown in Graph 6.13

It can be observed from the above table - 6.13 that

1. Mean score and S.D. of post-test score for High SES boys are 170.29 and 2.14 respectively and that of High SES girls are 169.14 and 1.77 respectively.

2. Obtained t-ratio is 1.10, which is not significant at any level of confidence.

Therefore, Hypothesis - 13 “There will be no significant difference between the mean scores of metacognitive thinking of students having High SES in post-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls.

6.3.14 Hypothesis - 14

There will be no significant difference between the mean scores of metacognitive thinking of students having Low SES in pre-test.

To study the effect of Low SES on score obtained by boys and girls on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.14
### Table 6.14

Descriptive statistics for Pre-test data for Low SES Students

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES (Boys)</td>
<td>7</td>
<td>121.43</td>
<td>16.59</td>
<td>0.19</td>
<td>NS</td>
</tr>
<tr>
<td>Low SES (Girls)</td>
<td>7</td>
<td>119.80</td>
<td>13.46</td>
<td>0.19</td>
<td>NS</td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for Low SES Students is shown in Graph 6.14

It can be observed from the above table – 6.14 that

1. Mean score and S.D. of pre-test score for Low SES boys are 121.43 and 16.59 respectively and that of Low SES girls are 119.80 and 13.46 respectively.

2. Obtained t-ratio is 0.19, which is not significant at any level of confidence.

Therefore, Hypothesis – 14 “There will be no significant difference between the mean scores of metacognitive thinking of students having Low SES in pre-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls.

### 6.3.15 Hypothesis - 15

There will be no significant difference between the mean scores of metacognitive thinking of students having Low SES in post-test.
To study the effect of Low SES on score obtained by boys and girls on metacognitive thinking inventory, SES scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.15

**Table 6.15**

**Descriptive statistics For Post-test data for Low SES Students**

<table>
<thead>
<tr>
<th>Post-test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES (Boys)</td>
<td>07</td>
<td>147</td>
<td>6.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low SES (Girls)</td>
<td>07</td>
<td>140.43</td>
<td>3.10</td>
<td>2.56</td>
<td>NS</td>
</tr>
</tbody>
</table>

Histogram for Post-test data for Low SES Students is shown in Graph 6.15

It can be observed from the above table – 6.15 that

1. Mean score and S.D. of post-test score for Low SES boys are 147 and 6.06 respectively and that of Low SES girls are 140.43 and 3.10 respectively.
2. Obtained t-ratio is 2.56, which is not significant at any level of confidence.

Therefore, Hypothesis – 15 “There will be no significant difference between the mean scores of metacognitive thinking of students having Low SES in post-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls.
6.3.16 Hypothesis - 16

There will be no significant difference between the mean scores of metacognitive thinking of High SES students in pre-test and post-test.

To study the effect of metacognitive thinking programme on students having High SES, metacognitive thinking inventory was used as pre-test and post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.16

**Table 6.16**

**Descriptive statistics For Pre-test and Post-test data for High SES Students**

<table>
<thead>
<tr>
<th>High SES(Students)</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>14</td>
<td>148.43</td>
<td>4.11</td>
<td>16.27</td>
<td>0.01</td>
</tr>
<tr>
<td>Post-Test</td>
<td>14</td>
<td>168.93</td>
<td>2.34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test and Post-test data for High SES Students is shown in Graph 6.16

It can be observed from the above table – 6.16 that
1. Mean score and S.D. of pre-test score for High SES are 148.43 and 4.11 respectively and that of post-test High SES are 168.93 and 2.34 respectively.

2. Obtained t-ratio is 16.27, which is significant at 0.01 level of confidence.

Therefore, Hypothesis-16 "There will be no significant difference between the mean scores of metacognitive thinking of High SES students in pre-test and post-test." - is rejected at 0.01 level of confidence. So the alternate hypothesis "The mean score of metacognitive of students having High SES for post-test would be higher than pre-test" was accepted. Thus, metacognitive thinking programme was found more effective for students having High SES.

6.3.17 Hypothesis - 17

There will be no significant difference between the mean scores of metacognitive thinking of Low SES students in pre-test and post-test.

To study the effect of metacognitive thinking programme on students having Low SES, metacognitive thinking inventory was used as pre-test and post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.17

Table 6.17

Descriptive statistics For Pre-test and Post-test data for Low SES

<table>
<thead>
<tr>
<th>Students</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>14</td>
<td>114.57</td>
<td>14.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Test</td>
<td>14</td>
<td>144.29</td>
<td>6.35</td>
<td>6.90</td>
<td>0.01</td>
</tr>
</tbody>
</table>
Histogram for Pre-test and Post-test data for Low SES Students is shown in
Graph 6.17

Graph 6.17 Histogram for Pre-test and Post-test data for Low SES Students

It can be observed from the above table – 6.17 that

1. Mean score and S.D. of pre-test score for Low SES are 114.57 and 14.83 respectively and that of post-test Low SES are 144.29 and 6.35 respectively.

2. Obtained t-ratio is 6.90, which is not significant at any level of confidence.

Therefore, Hypothesis-17 “There will be no significant difference between the mean scores of metacognitive thinking of Low SES students in pre-test and post-test.” -is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having Low SES post-test would be higher than for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for students having Low SES.

6.3.18 Hypothesis – 18

There will be no significant difference between the mean scores of metacognitive thinking of High IQ and Low IQ students in pre-test.

To study the effect of IQ on score obtained by students on metacognitive thinking inventory, IQ test was used along with metacognitive thinking invnetory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.18
Table 6.18
Descriptive statistics For Pre-test data for High IQ and Low IQ Students

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Students)</td>
<td>14</td>
<td>150.36</td>
<td>4.52</td>
<td>9.81</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ (Students)</td>
<td>14</td>
<td>110.71</td>
<td>14.44</td>
<td>9.81</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for High IQ and Low IQ Students is shown in Graph 6.18

It can be observed from the above table – 6.18 that
1. Mean score and S.D. of pre-test score are 150.36 and 4.52 respectively and that of Post-test Score are 110.71 and 14.44 respectively.
2. Obtained t-ratio is 9.81, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 18 “There will be no significant difference between the mean scores of metacognitive thinking of High IQ and Low IQ students in pre-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having High IQ would be higher than
Low IQ for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for students having High IQ.

6.3.19 Hypothesis – 19

There will be no significant difference between the mean scores of metacognitive thinking of High IQ and Low IQ students in post-test.

To study the effect of IQ on score obtained by students on metacognitive thinking inventory, IQ test was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.19

<table>
<thead>
<tr>
<th>Post-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Students)</td>
<td>14</td>
<td>168.93</td>
<td>2.34</td>
<td>17.31</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ (Students)</td>
<td>14</td>
<td>143.21</td>
<td>5.04</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Post-test data for High IQ and Low IQ Students is shown in Graph 6.19

It can be observed from the above table – 6.19 that
1. Mean score and S.D. of post-test score for High IQ are 168.93 and 2.34 respectively and that of Low IQ are 143.21 and 5.04 respectively.

2. Obtained t-ratio is 17.31, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 19 “There will be no significant difference between the mean scores of metacognitive thinking of High IQ and Low IQ students in post test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having High IQ would be higher than Low IQ for post-test” was accepted. Thus, metacognitive thinking programme was found more effective for students having High IQ.

6.3.20 Hypothesis - 20

There will be no significant difference between the mean scores of metacognitive thinking of boys having High IQ and Low IQ in pre-test.

To study the effect of IQ on score obtained by boys on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.20

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Boys)</td>
<td>7</td>
<td>153.71</td>
<td>3.55</td>
<td>6.43</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ (Boys)</td>
<td>7</td>
<td>110.29</td>
<td>17.49</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Histogram for Pre-test data for High IQ and Low IQ Boys is shown in Graph 6.20

Graph 6.20 Histogram for Pre-test data for High IQ and Low IQ Boys

It can be observed from the above table – 6.20 that

1. Mean score and S.D. of pre-test score for High SES boys are 153.71 and 3.55 respectively and that of Pre-test score for Low SES boys are 110.29 and 17.49 respectively.

2. Obtained t-ratio is 6.43, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 20 “There will be no significant difference between the mean scores of metacognitive thinking of boys having High IQ and Low IQ in pre-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of boys having High IQ would be higher than Low IQ for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for boys having High IQ.

6.3.21 Hypothesis - 21

There will be no significant difference between the mean scores of metacognitive thinking of boys having High IQ and Low IQ in post-test.

To study the effect of IQ on score obtained by boys on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.21
Table 6.21

Descriptive statistics For Post-test data for High IQ and Low IQ Boys

<table>
<thead>
<tr>
<th>Post-test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ(Boys)</td>
<td>07</td>
<td>170.29</td>
<td>2.14</td>
<td>9.58</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ(Boys)</td>
<td>07</td>
<td>147</td>
<td>6.06</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Post-test data for High IQ and Low IQ Boys is shown in Graph 6.21

Graph 6.21 Histogram for Post-test data for High IQ and Low IQ Boys

It can be observed from the above table – 6.21 that

1. Mean score and S.D. of post-test score for High IQ boys are 170.29 and 2.14 respectively and that of Low IQ boys are 147 and 6.06 respectively.
2. Obtained t-ratio is 9.58, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 21 “There will be no significant difference between the mean scores of metacognitive thinking of boys having High IQ and Low IQ in post-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of boys having High IQ would be higher than Low IQ for post-test” was accepted. Thus, metacognitive thinking programme was found more effective for boys having High IQ.
6.3.22 Hypothesis - 22

There will be no significant difference between the mean scores of metacognitive thinking of girls having High IQ and Low IQ in pre-test.

To study the effect of IQ on score obtained by Girls on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.22

Table 6.22
Descriptive statistics For Pre-test data for High IQ and Low IQ Girls

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Girls)</td>
<td>7</td>
<td>145.43</td>
<td>3.51</td>
<td>9.30</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ (Girls)</td>
<td>7</td>
<td>108.71</td>
<td>9.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for High IQ ans Low IQ Girls is shown in Graph 6.22

Graph 6.22 Histogram for Pre-test data for High IQ and Low IQ Girls

It can be observed from the above table – 6.22 that
1. Mean score and S.D. of pre-test score for High IQ girls are 145.43 and 3.51 respectively and that of pre-test score for Low IQ girls are 108.71 and 9.80 respectively.

2. Obtained t-ratio is 9.30, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 22 “There will be no significant difference between the mean scores of metacognitive thinking of girls having High IQ and Low IQ in pre-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of girls having High IQ would be higher than Low IQ for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for girls having High IQ.

6.3.23 Hypothesis – 23

There will be no significant difference between the mean scores of metacognitive thinking of girls having High IQ and Low IQ in post-test.

To study the effect of IQ on score obtained by girls on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.23

Table 6.23

Descriptive statistics For Post-test data for High IQ and Low IQ Girls

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Girls)</td>
<td>07</td>
<td>167</td>
<td>2.31</td>
<td>18.20</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ (Girls)</td>
<td>07</td>
<td>140.43</td>
<td>3.10</td>
<td>18.20</td>
<td>0.01</td>
</tr>
</tbody>
</table>
Histogram for Post-test data for High IQ and Low IQ Girls is shown in Graph 6.23

Graph 6.23 Histogram for Post-test data for High IQ and Low IQ Girls

It can be observed from the above table – 6.23 that

1. Mean score and S.D. of post-test score for High IQ girls are 167 and 2.31 respectively and that of Low IQ girls are 140.43 and 3.10 respectively.
2. Obtained t-ratio is 18.20, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 23 “There will be no significant difference between the mean scores of metacognitive thinking of girls having High IQ and Low IQ in post-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of girls having High IQ would be higher than Low IQ for post-test” was accepted. Thus, metacognitive thinking programme was found more effective for girls having High IQ.

6.3.24 Hypothesis – 24

There will be no significant difference between the mean scores of metacognitive thinking of students having High IQ in pre-test.

To study the effect of high IQ on score obtained by boys and girls on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.24
Table 6.24
Descriptive statistics For Pre-test data for High IQ Students

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Boys)</td>
<td>7</td>
<td>149</td>
<td>5.63</td>
<td>4.01</td>
<td>0.01</td>
</tr>
<tr>
<td>High IQ (Girls)</td>
<td>7</td>
<td>139.14</td>
<td>7.28</td>
<td>4.01</td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test data for High IQ Students is shown in Graph 6.24

It can be observed from the above table – 6.24 that

1. Mean score and S.D. of pre-test score for High IQ boys are 149 and 5.63 respectively and that of pre-test score for High IQ girls are 139.14 and 7.28 respectively.

2. Obtained t-ratio is 4.01, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 24 “There will be no significant difference between the mean scores of metacognitive thinking of students having High IQ in pre-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having High IQ boys would be higher than girls for pre-test” was accepted. Thus, metacognitive thinking programme was found more effective for boys having High IQ.
6.3.25 Hypothesis - 25

There will be no significant difference between the mean scores of metacognitive thinking of students having High IQ in post-test.

To study the effect of high IQ on score obtained by boys and girls on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table - 6.25

**Table 6.25**

**Descriptive statistics For Post-test data for High IQ Students**

<table>
<thead>
<tr>
<th>Post-test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High IQ (Boys)</td>
<td>7</td>
<td>170.29</td>
<td>2.14</td>
<td>3.92</td>
<td>0.01</td>
</tr>
<tr>
<td>Low IQ (Girls)</td>
<td>7</td>
<td>167</td>
<td>2.31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Post-test data for High IQ Students is shown in Graph 6.25

It can be observed from the above table – 6.25 that

1. Mean score and S.D. of post-test score for High IQ boys are 170.29 and 2.14 respectively and that of post-test for High IQ girls are 167 and 2.31 respectively.
2. Obtained t-ratio is 3.92, which is not significant at any level of confidence. Therefore, Hypothesis – 25 “There will be no significant difference between the mean scores of metacognitive thinking of students having High IQ in post-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having High IQ boys would be higher than girls for post-test” was accepted. Thus, metacognitive thinking programme was found more effective for boys having High IQ.

6.3.26 Hypothesis – 26

There will be no significant difference between the mean scores of metacognitive thinking of students having Low IQ in pre-test.

To study the effect of Low IQ on score obtained by boys and girls on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as pre-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.26

<table>
<thead>
<tr>
<th>Table 6.26</th>
</tr>
</thead>
</table>

**Descriptive statistics For Pre-test data for Low IQ Students**

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low IQ (Boys)</td>
<td>7</td>
<td>121.43</td>
<td>16.59</td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Low IQ (Girls)</td>
<td>7</td>
<td>119.86</td>
<td>13.46</td>
<td>0.19</td>
<td></td>
</tr>
</tbody>
</table>

164
It can be observed from the above table – 6.26 that
1. Mean score and S.D. of pre-test score for Low IQ boys are 121.43 and 16.59 respectively and that of pre-test Score for Low IQ girls are 119.86 and 13.46 respectively.

2. Obtained t-ratio is 0.19, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 26 “There will be no significant difference between the mean scores of metacognitive thinking of students having Low IQ in pre-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was equally effective for boys and girls having Low IQ.

**6.3.27 Hypothesis – 27**

There will be no significant difference between the mean scores of metacognitive thinking of students having Low IQ in post-test.

To study the effect of Low IQ on score obtained by boys and girls on metacognitive thinking inventory, IQ scale was used along with metacognitive thinking inventory as post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.27
Table 6.27
Descriptive statistics For Post-test data for Low IQ Students

<table>
<thead>
<tr>
<th>Post-test</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low IQ (Boys)</td>
<td>7</td>
<td>147</td>
<td>6.06</td>
<td>2.56</td>
<td>NS</td>
</tr>
<tr>
<td>Low IQ (Girls)</td>
<td>7</td>
<td>140.43</td>
<td>3.10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Post-test data for Low IQ Students is shown in Graph 6.27

It can be observed from the above table – 6.27 that

1. Mean score and S.D. of post-test score for Low IQ boys are 147 and 6.06 respectively and that of post-test for Low IQ girls are 140.43 and 3.10 respectively.

2. Obtained t-ratio is 2.56, which is not significant at any level of confidence.

Therefore, Hypothesis – 27 “There will be no significant difference between the mean scores of metacognitive thinking of students having Low IQ in post-test.” is not rejected at any level of confidence. So the hypothesis was accepted. Thus, metacognitive thinking programme was found equally effective for boys and girls having Low IQ.
6.3.28 Hypothesis – 28

There will be no significant difference between the mean scores of metacognitive thinking of students having High IQ in pre-test and post-test.

To study the effect of metacognitive thinking programme on students having High IQ, metacognitive thinking inventory was used as pre-test and post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.28

Table 6.28
Descriptive statistics For Pre-test and Post-test data for High IQ Students

<table>
<thead>
<tr>
<th>High IQ</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test</td>
<td>14</td>
<td>148.43</td>
<td>4.11</td>
<td>16.62</td>
<td>0.01</td>
</tr>
<tr>
<td>Post-Test</td>
<td>14</td>
<td>169.21</td>
<td>2.20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Histogram for Pre-test and Post-test data for High IQ Students is shown in

Graph 6.28

Graph 6.28 Histogram for Pre-test and Post-test data for High IQ Students

It can be observed from the above table – 6.28 that
1. Mean score and S.D. of pre-test score for High IQ are 148.43 and 4.11 respectively and that of post-test score for Low IQ are 169.21 and 2.20 respectively.

2. Obtained t-ratio is 16.62, which is significant at 0.01 level of confidence.

Therefore, Hypothesis – 28 “There will be no significant difference between the mean scores of metacognitive thinking of students having High IQ in pre-test and post-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having High IQ for post-test would be higher than pre-test” was accepted. Thus, metacognitive thinking programme was found effective for students having High IQ.

6.3.29 Hypothesis - 29

There will be no significant difference between the mean scores of metacognitive thinking of students having Low IQ in pre-test and post-test.

To study the effect of metacognitive thinking programme on students having low IQ, metacognitive thinking inventory was used as pre-test and post-test to obtain data and descriptive statistics and t-test were computed. Results of descriptive statistics and t-test are presented in Table – 6.29

Table 6.29

Descriptive statistics For Pre-test and Post-test data for Low IQ

<table>
<thead>
<tr>
<th>Students</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>Sign.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low IQ Pre-Test</td>
<td>14</td>
<td>112.57</td>
<td>13.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Test</td>
<td>14</td>
<td>143.21</td>
<td>5.04</td>
<td>8.06</td>
<td>0.01</td>
</tr>
</tbody>
</table>
Histogram for Pre-test and Post-test data for Low IQ is shown in Graph 6.29

Graph 6.29 Histogram for Pre-test and Post-test data for Low IQ Students

It can be observed from the above table – 6.29 that

1. Mean score and S.D. of pre-test score for Low IQ are 112.57 and 13.28 respectively and that of post-test Low IQ are 143.21 and 5.04 respectively.

2. Obtained t-ratio is 8.06, which is significant at 0.01 level of confidence.

Therefore, Hypothesis –29 “There will be no significant difference between the mean scores of metacognitive thinking of students having Low IQ in pre-test and post-test.” is rejected at 0.01 level of confidence. So the alternate hypothesis “The mean score of metacognitive thinking of students having Low IQ for post-test would be higher than pre-test” was accepted. Thus, metacognitive thinking programme was found effective for students having Low IQ.

6.5 ANALYSIS OF STUDENTS FEEDBACK ON METACOGNITIVE THINKING PROGRAMME

To get students’ feedback, 52 students’ were taken who had undergone the metacognitive thinking programme. Student’s feedback was taken to get their feelings and responses towards metacognitive thinking programme. A set of statements was given to students after the completion of metacognitive thinking programme as shown in Appendix-5. Students have to give their feedback regarding experiences during implementation of metacognitive thinking programme by stating ‘Yes’ or ‘No’. Statements were framed keeping following things in mind.
1. Interest level of the programme.
2. Questions ability to promote thinking.
3. Familiarity towards such type of questions.
4. Difficulty of questions.
5. Change in attitude towards difficult questions during progression of programme.
6. Effectiveness of figures in solving questions.
7. Usefulness of practice questions.
8. Change in thinking level felt by students.
9. Effectiveness of worksheet provided during programme.
10. Comfort level in answering for post-test than that of pre-test.
11. Success of the programme.
12. Confidence in solving such questions in future.
13. Willingness to join such programme in future.

Apart from this investigator has tried to gather feedback as open responses which are analyzed qualitatively.

After counting the frequencies the analysis was done employing Chi square technique. The results are shown in table 6.30

**Table 6.30**

**Chi-square Values of Student’s Feedback for Metacognitive Thinking Programme**

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>Fe</th>
<th>Fo</th>
<th>Chi Square</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>During whole programme, we enjoyed.</td>
<td>26</td>
<td>52</td>
<td>52.00*</td>
<td>S</td>
</tr>
<tr>
<td>2</td>
<td>Programme consists thought provoking questions.</td>
<td>26</td>
<td>49</td>
<td>40.70*</td>
<td>S</td>
</tr>
<tr>
<td>3</td>
<td>I had solved this type of items in past.</td>
<td>26</td>
<td>24</td>
<td>0.30*</td>
<td>NS</td>
</tr>
<tr>
<td>4</td>
<td>Questions of the programme were found difficult.</td>
<td>26</td>
<td>49</td>
<td>40.70*</td>
<td>S</td>
</tr>
<tr>
<td>5</td>
<td>Questions of the programme were initially found hard but felt easy</td>
<td>26</td>
<td>51</td>
<td>17.30*</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>Statement</td>
<td>Frequency</td>
<td>Percentage</td>
<td>Chi-Square Value</td>
<td>Significance</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>------------</td>
<td>------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>6</td>
<td>Items of programme were easily understood when solved by using figures</td>
<td>26</td>
<td>49</td>
<td>40.70*</td>
<td>S</td>
</tr>
<tr>
<td>7</td>
<td>Practice questions given at the end of each question were found helpful in enhancing understanding.</td>
<td>26</td>
<td>52</td>
<td>52.00*</td>
<td>S</td>
</tr>
<tr>
<td>8</td>
<td>I felt change in my thought ability at the end of the programme.</td>
<td>26</td>
<td>49</td>
<td>40.70*</td>
<td>S</td>
</tr>
<tr>
<td>9</td>
<td>Worksheets given during programme were found useful.</td>
<td>26</td>
<td>52</td>
<td>52.00*</td>
<td>S</td>
</tr>
<tr>
<td>10</td>
<td>Answering metacognitive thinking test was found easy after programme.</td>
<td>26</td>
<td>51</td>
<td>17.30*</td>
<td>S</td>
</tr>
<tr>
<td>11</td>
<td>I could solve such type of questions in future.</td>
<td>26</td>
<td>52</td>
<td>52.00*</td>
<td>S</td>
</tr>
<tr>
<td>12</td>
<td>I would like to join again in such type of programme.</td>
<td>26</td>
<td>52</td>
<td>52.00*</td>
<td>S</td>
</tr>
<tr>
<td>13</td>
<td>Whole programme was successful.</td>
<td>26</td>
<td>52</td>
<td>52.00*</td>
<td>S</td>
</tr>
</tbody>
</table>

* Significant at 0.01 level = 6.635 ** Significant at 0.05 level = 3.841

S = Significant, NS = Not Significant

By observing Table 6.19, it is observed that except statement no. 3 all the chi-square values are significant at 0.01 level.

For statement – 1 the frequencies for ‘yes’ is 52 (100%). The chi-square value being 52.00 is significant at 0.01 level. It shows that all students found metacognitive thinking programme interesting and they have enjoyed the programme a lot.

For statement – 2 the frequencies for ‘yes’ is 49 (94%) which is higher than ‘no’. The chi-square value being 40.70 is significant at 0.01 level. It shows that students felt that questions in the programme were thought provoking.

For statement – 3 the frequencies for ‘yes’ is 24 (46%) which is lower than ‘no’. The chi-square value being 0.30 is significant at 0.01 level. It shows that most of
students have not solved type of questions involved in meatcognitive thinking programme.

For statement – 4 the frequencies for ‘yes’ is 49 (94%). The chi-square value being 40.70 is significant at 0.01 level. It shows that almost all students does not found meatcognitive thinking programme difficult at initial stage.

For statement – 5 the frequencies for ‘yes’ is 51 (98%). The chi-square value being 17.30 is significant at 0.01 level. It shows that almost all students felt that questions were found difficult at the initial stage but was felt easy during the progression of the programme.

For statement – 6 the frequencies for ‘yes’ is 49 (94%). The chi-square value being 40.70 is significant at 0.01 level. It shows that almost all students felt that item were easy to understand when solved with the help of the figure.

For statement – 7 the frequencies for ‘yes’ is 52 (100%). The chi-square value being 52.00 is significant at 0.01 level. It shows that all students found that practice questions given at the end of programme were very useful.

For statement – 8 the frequencies for ‘yes’ is 49 (94%). The chi-square value being 40.70 is significant at 0.01 level. It shows that almost all students felt that there is increase in their thinking level at the end of the programme.

For statement – 9 the frequencies for ‘yes’ is 52 (100%). The chi-square value being 52.00 is significant at 0.01 level. It shows that all students found that the worksheets given during the programme were very useful to them.

For statement – 10 the frequencies for ‘yes’ is 51 (98%). The chi-square value being 17.30 is significant at 0.01 level. It shows that all students found that they could easily answer on meatcognitive thinking test during posttest than that of pretest.

For statement – 11 the frequencies for ‘yes’ is 52 (100%). The chi-square value being 52.00 is significant at 0.01 level. It shows that all students found that a programme was completely successful.

For statement – 12 the frequencies for ‘yes’ is 52 (100%). The chi-square value being 52.00 is significant at 0.01 level. It shows that all students show their confidence in solving such type of questions in future.

For statement – 13 the frequencies for ‘yes’ is 52 (100%). The chi-square value being 52.00 is significant at 0.01 level. It shows that all students found willing to join such programme in future.
List of Open Responses Analyzed Qualitatively:

Students' feedback on metacognitive thinking programme was also taken as an open response in given space. Many of the students had given their responses which are listed as out below:

1. We have liked this programme a lot. Such programme helps to solve similar questions in future. The programme was very good.
2. We enjoyed the programme and also had learnt lots of new things. We can now answer to such questions without fear in future.
3. I liked this programme very much and I will not feel boring to undergo such programme for whole day. I like this programme than mathematics and science.
4. Students should take part in such programme.
5. Solving such questions at this stage helps in future.
6. I found change in my thinking level due to this programme.
7. This programme was easy and very useful.
8. This programme was easily learnt and was very useful.
9. We enjoyed solving the questions given in the programme.
10. Such type of programme can be enjoyed if given again.
11. I like the programme very much and would like to undergo such programme again.
12. Questions were thought provoking which enhances my intelligence.
13. The analysis of the data from student's feedback showed students' favor towards metacognitive thinking programme. Students were asked to give their feedback towards the given set of statements along with open responses. Their responses were positive towards metacognitive thinking programme and found it interesting and necessary for their enhancement of metacognitive thinking.

Next chapter comprises of summary, findings, implications and recommendations.