RESULTS AND DISCUSSIONS
CHAPTER – V

RESULTS AND DISCUSSIONS

This chapter deals with the analysis of the data collected for the study. The effectiveness of Computer Assisted Activity Package (CAAP) was measured through an achievement test with a set of 100 items. Each item in the achievement test carries ‘one’ mark for right response and ‘zero’ for wrong response. The same achievement test as well as the same scoring procedure was used to measure the effectiveness of the traditional lecture method also.

Before starting experiment a pre-test was conducted to the students of both the groups. The total score obtained by each student in the pre-test was calculated. Then, after the Computer Assisted Activity Package (CAAP) treatment to the experimental group for a period of 30 days, a post-test was conducted to all the groups. Based on the total score of each subject mean and standard deviation, for pre-test and post-test for each group i.e. control group and experimental group were calculated. The t-test was applied to know the significant difference, if any, in the achievement of the control group students and the experimental group students.

The analysis of data and the findings are presented in the form of tables.

5.1.1. COMPARISON OF PRE-TEST MEAN SCORES OF CONTROL GROUP SLOW LEARNERS AND EXPERIMENTAL GROUP SLOW LEARNERS

Mean and standard deviation of the pre-test scores of Control Group Students and Experimental Group Slow Learners and the calculated t-values are presented in table –5.1
TABLE: 5.1

COMPARISON OF MEAN ACHIEVEMENT SCORES OF SLOW LEARNERS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT PRE STAGE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>27.50</td>
<td>2.56</td>
<td></td>
</tr>
<tr>
<td>Experimental Group</td>
<td>27.40</td>
<td>2.62</td>
<td>0.08@</td>
</tr>
</tbody>
</table>

Note : @ not significant at 0.05 level.

By observing Table 5.1, it was evident that the pre-test mean achievement scores of control group was 27.50 and the S.D. was 2.56. Whereas, the mean achievement scores of experimental group was 27.40 and S.D was 2.62. The calculated ‘t’ value was 0.08 which was not significant 0.05 level. As there is no difference between the mean achievement scores of both the groups it is inferred that they are equal before treatment.

It indicates that there is no variation in the achievement of the control group and the experimental group students in the pre-test performance. Hence the formulated hypothesis, ‘there is no significant difference between the pre-test mean achievement scores of slow learners of control group students and experimental group students’ is accepted.

From the above, it is concluded that, there is no significant difference between the control group and the experimental group slow learners in the pre-test performance. Therefore, both groups were equal before the treatment phase. It implies that the control
group and the experimental group in the present study were matched ones before the experiment.

5.1.2. COMPARISON OF POST-TEST MEAN SCORES OF CONTROL GROUP SLOW LEARNERS AND EXPERIMENTAL GROUP SLOW LEARNERS

Mean and standard deviation of the post-test mean scores of Control Group Slow Learner and Experimental Group Slow learners and the calculated t-values are presented in table – 5.2

**TABLE: 5.2**

**COMPARISON OF MEAN ACHIEVEMENT SCORES OF SLOW LEARNERS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT POST STAGE**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>29.50</td>
<td>1.74</td>
<td></td>
</tr>
<tr>
<td>Experimental Group</td>
<td>41.75</td>
<td>2.49</td>
<td>12.75**</td>
</tr>
</tbody>
</table>

Note: **significant at 0.01 level

From table – 5.2, it is evident that the obtained t-value (12.75) is significant at 0.01 level. It implies that the achievement of the experimental group slow learners is higher than the achievement of the control group students. The experimental group has very much improved upon their pre-test performance. Hence the formulated hypothesis that ‘there is a significant difference between the post-test mean scores of the control group slow learners and the experimental group slow learners’ is accepted.
A critical study of the mean values reveals that the experimental group slow learners are far ahead of the control group slow learners. Both the groups were matched ones in the pre-test performance. But in the post-test, there is significant variation between the two groups. The experimental group slow learners have evinced tremendous progress in the post-test performance. The progress made by the experimental group slow learners can be attributed to the effectiveness of the applied strategy i.e. Computer Assisted Activity Package (CAAP).

From the above analysis it can be concluded that there is significant difference in the post-test performance between the control group slow learners and the experimental group slow learners. The achievement of the experimental group slow learners is higher than the achievement of the control group slow learners. The progress made by the experimental group slow learners in the post-test performance is the resultant product of the experimental treatment i.e. Computer Assisted Activity Package (CAAP). It substantiates the effectiveness of Computer Assisted Activity Package (CAAP) in teaching Mathematics at Eighth standard level. The control group and experimental group were matched ones before the experiment. After the experimental treatment, there is gulf of difference between the two groups. The gulf of difference between the control group and the experimental group bears testimony to the advantage of the computer assisted instruction over the traditional lecture method.

5.1.3. COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT PRE STAGE

Mean and standard deviation of the Pre-test scores of Control Group Students and Experimental Group Students and the calculated t-values are presented in table -5.3
TABLE: 5.3

COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT PRE STAGE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>80.15</td>
<td>3.76</td>
<td>0.06^®</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>80.25</td>
<td>3.52</td>
<td></td>
</tr>
</tbody>
</table>

Note: @ not significant at 0.05 level

From table – 5.3, it is seen that the obtained t-value (0.06) is not significant at 0.05 level. The pre test mean scores of above average students in both the groups have shown a matching performance. Hence the formulated hypothesis that ‘there is no significant difference between the pre-test mean scores of the above average students in the control group and the experimental group’ is accepted.

From the above analysis it can be concluded that there is no significant difference between the above average students in the control group and the experimental group. The above average students in both the groups have evinced same degree of achievement in the pre-test. Above average students in the control group are on par with their counterparts in the experimental group in the pre-test performance. It bears testimony to matching of the groups and it substantiates the reliability of classification of students into above average in both the groups.
5.1.4. COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT POST STAGE

Mean and standard deviation of the post-test scores of Control Group Students and Experimental Group Students and the calculated t-values are presented in table – 5.4

TABLE: 5.4

COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT POST STAGE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>82.25</td>
<td>3.54</td>
<td>2.86*</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>86.15</td>
<td>2.45</td>
<td></td>
</tr>
</tbody>
</table>

Note: * significant at 0.05 level.

From table – 4, it is clear that the obtained t-value (2.86) is significant at 0.05 level. It evinced that the achievement of the above average students in the experimental group is higher than the achievement of their counterparts in the control group. The formulated hypothesis that ‘there is significant difference between the post-test mean scores of the above average students in both the group’ is therefore accepted.

The mean values obtained by above average students in both the groups reveal that the above average students of experimental group have done better in the post – test than their counterparts in the control group. The progress made by above average students
in the experimental group vouches for the effectiveness of computer assisted instruction in Mathematics at Eighth standard level. Though the groups were matched ones before the experiment, in the post – test the experimental group above average students have established a clear lead over the control group above average students. This can be attributed to the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

The above analysis gives the conclusion that there is significant difference between the post-test mean scores of above average students in both the groups. The achievement of above average students in the experimental group is higher than the achievement of their respective counterparts in the control group. The progress made by above average students in the experimental group can be attributed to the effectiveness of the applied instructional strategy i.e. Computer Assisted Activity Package (CAAP). The above average students in both the group were matched ones before the experiment. But after the experimental treatment, there is a gulf of difference between both groups. The gulf of difference between above average students in the control group and the experimental group brings to light the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

5.1.5. COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT PRE STAGE

Mean and standard deviation of the pre-test scores of Average Students Control Group and Experimental Group Students and the calculated t-values are presented in table –5.5
TABLE: 5.5

COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT PRE STAGE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>46.50</td>
<td>2.24</td>
<td></td>
</tr>
<tr>
<td>Experimental Group</td>
<td>48.10</td>
<td>3.49</td>
<td>1.2*</td>
</tr>
</tbody>
</table>

Note: * not significant at 0.05 level

From table – 5.5, it is seen that the obtained t-values (1.2) is not significant at 0.05 level. The pre test mean scores of average students in both the groups have shown a matching performance. Hence the formulated hypothesis that ‘there is no significant difference between the pre-test mean scores of the average students in the control group and the experimental group’ is accepted.

From the above analysis it can be concluded that there is no significant difference between the average students in the control group and the experimental group. The average students in both the groups have evinced same degree of achievement in the pre-test. Average students in the control group are on par with their counterparts in the experimental group in the pre-test performance. It bears testimony for matching of the groups and it substantiates the reliability of classification of students into average in both the groups.
5.1.6. COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT POST STAGE

Mean and standard deviation of the post-test scores of Average Students Control Group and Experimental Group Students and the calculated t-values are presented in table – 5.6

**TABLE: 5.6**

**COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF CONTROL GROUP AND EXPERIMENTAL GROUP AT POST STAGE**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>49.50</td>
<td>3.00</td>
<td>6.62**</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>57.65</td>
<td>2.48</td>
<td></td>
</tr>
</tbody>
</table>

Note: **significant at 0.01 level.

From table – 5.6, it is clear that the obtained t-value (6.62) is significant at 0.01 level. It evinced that the achievement of the average students in the experimental group is higher than the achievement of their counterparts in the control group. The formulated hypothesis that ‘there is significant difference between the post-test mean scores of the average students in both the group’ is therefore accepted.

The mean values obtained by average students in both the groups reveal that the average students of experimental group have done better in the post – test than their
counterparts in the control group. The progress made by average students in the experimental group vouches for the effectiveness of computer assisted instruction in Mathematics at Eighth standard level. Though the groups were matched ones before the experiment, in the post – test the experimental group average students have established a clear lead over the control group average students. This can be attributed to the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

The above analysis gives the conclusion that there is significant difference between the post-test mean scores of average students in both the groups. The achievement of average students in the experimental group is higher than the achievement of their respective counterparts in the control group. The progress made by average students in the experimental group can be attributed to the effectiveness of the applied instructional strategy i.e. Computer Assisted Activity Package (CAAP). The average students in both the group were matched ones before the experiment. But after the experimental treatment, there is a gulf of difference between both groups. The gulf difference between average students in the control group and the experimental group brings to light the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

5.1.7. COMPARISON OF MEAN ACHIEVEMENT SCORES OF SLOW LEARNERS OF CONTROL GROUP AT PRE AND POST STAGE

Mean and standard deviation of Pre and Post test Scores of Slow Learners Control Group students and the calculated t-values are presented in table –5.7
TABLE: 5.7

COMPARISON OF MEAN ACHIEVEMENT SCORES OF SLOW LEARNERS OF CONTROL GROUP AT PRE AND POST STAGE

<table>
<thead>
<tr>
<th>Control Group</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>27.50</td>
<td>2.62</td>
<td>2.01*</td>
</tr>
<tr>
<td>Post Test</td>
<td>29.50</td>
<td>1.74</td>
<td></td>
</tr>
</tbody>
</table>

Note : * significant at 0.05 level

From table - 5.7, it can be observed that the t-value (2.01) obtained in respect of the slow learners respectively is significant at 0.05 level. There is a significant difference in the performance of the slow learners between the pre-test and the post-test. Hence the formulated hypothesis that ‘there is no significant difference in the performance of the students between the pre-test and the post-test’ is rejected with regard to the slow learners.

A scrutiny of mean values obtained by the students in slow learners brings to light certain interesting revelations. The slow learners have made mean gains of 2.0 when taught with the traditional method. In terms of rate of progress, they have shown rates of progress amounting to 8% respectively. It reveals that the traditional lecture method is it has been just effective in teaching Mathematics to the students of slow learners at Eighth standard level.

From the above it can be concluded that there is significant difference in the performance of slow learners of students in the control group between the pre-test and the
post-test. It shows that the traditional lecture method, as an instructional strategy, could enable the slow learners of control group to improve upon their pre-test score. Thought it has been effective for the slow learners, it cannot be said that it has been very effective. This can be understood from the meager percentage of the rate of progress shown by them.

5.1.8. COMPARISON OF MEAN ACHIEVEMENT SCORES OF SLOW LEARNERS OF EXPERIMENTAL GROUP AT PRE AND POST STAGE

Mean and standard deviation of Pre and Post test Scores of Slow Learners Experimental Group students and the calculated t-values are presented in table –5.8

TABLE: 5.8

COMPARISON OF MEAN ACHIEVEMENT SCORES OF SLOW LEARNERS OF EXPERIMENTAL GROUP AT PRE AND POST STAGE

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>27.40</td>
<td>2.56</td>
<td></td>
</tr>
<tr>
<td>Post Test</td>
<td>47.15</td>
<td>2.49</td>
<td>12.70**</td>
</tr>
</tbody>
</table>

Note : ** significant at 0.01 level

From table –5.8, it can be seen that the t-value (12.70) obtained in respect of slow learners is significant at 0.01 level. The performance of slow learners in the post-test is better than their performance in the pre-test. It implies that the applied instructional strategy has been effective to slow learners in teaching Mathematics. Hence the
formulated hypothesis that ‘there is significant difference between the pre-test and the post-test scores in respect of slow learners in the experimental group’ is accepted.

A glance at the mean values reveals the progress made by slow learners in the experimental group. The slow learners have made a mean gain of 19.75 (47.15 – 27.40 = 19.75). They have shown a rate of progress of 52.4% in the post-test. The improvement in the post-test mean values indicates that the Computer Assisted Activity Package (CAAP) is very effective to slow learners.

From the above it can be concluded that there is significant difference in the performance of the slow learners in the experimental group between the pre-test and the post-test. Their performance in the post-test is far better than their performance in the pre-test. The slow learners in each group have shown a marked progress in their post-test performance. Slow learners have made much impressive mean gains amounting to 19.75 respectively, in terms of rate of progress, the slow learners stand first showing 52.4% improvement.

In term of relative effectiveness of the applied strategies i.e. Computer Assisted Activity Package (CAAP) is most effective to the slow learners. This substantiates the effectiveness of computer assisted instruction in teaching Mathematics to slow learners at eighth standard level. Further, a comparison of table –5.7 and table –5.8 brings to light the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.
5.1.9. COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE OF CONTROL GROUP AT PRE AND POST STAGE

Mean and standard deviation of Pre and Post test Scores of Above Average Control Group students and the calculated t-values are presented in table –5.9

**TABLE: 5.9**

COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE STUDENTS OF CONTROL GROUP AT PRE AND POST STAGE

<table>
<thead>
<tr>
<th>Control Group</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>80.15</td>
<td>3.76</td>
<td>1.26@</td>
</tr>
<tr>
<td>Post Test</td>
<td>82.25</td>
<td>3.54</td>
<td></td>
</tr>
</tbody>
</table>

Note : @ not significant at 0.05 level

From table - 5.9, it can be observed that the t-value (1.26) obtained in respect of the above average students is not significant at 0.05 level. There is no significant difference in the performance of the above average students between the pre-test and the post-test. Hence the formulated hypothesis that ‘there is no significant difference in the performance of the above average students between the pre-test and the post-test’ is accepted.

A scrutiny of mean values obtained by the students in various categories brings to light certain interesting revelations. The above average students have made mean gains of 2.06 respectively. In terms of rate of progress, they have shown rates of progress amounting to 2.5% respectively. It reveals that the traditional lecture method is not
having significant effect in teaching Mathematics to the students of above average at Eighth standard level. Hence there is no significant difference in the performance of the above average students between the pre-test and the post test.

From the above it can be concluded that there is no significant difference in the performance of above average students in the control group between the pre-test and the post-test. It shows that the traditional lecture method, as an instructional strategy, could not enable the above average students in the control group to improve upon their pre-test score. The analysis of this table indicates the need for introduction of innovative methods in teaching Mathematics to above average students at Eighth standard level.

5.1.10. COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE OF EXPERIMENTAL GROUP AT PRE AND POST STAGE

Mean and standard deviation of Pre and Post test Scores of Above Average Experimental Group students and the calculated t-values are presented in table –5.10

TABLE: 5.10

COMPARISON OF MEAN ACHIEVEMENT SCORES OF ABOVE AVERAGE STUDENTS OF EXPERIMENTAL GROUP AT PRE AND POST STAGE

<table>
<thead>
<tr>
<th>Experimental Group</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>80.25</td>
<td>3.52</td>
<td></td>
</tr>
<tr>
<td>Post Test</td>
<td>86.15</td>
<td>2.45</td>
<td>4.35 **</td>
</tr>
</tbody>
</table>

Note: ** significant at 0.01 level
From table -5.10, it can be seen that the t-values (4.35) obtained in respect of above average students is significant at 0.01 level. The performance of above average students in the post-test is better than their performance in the pre-test. It implies that the applied instructional strategy has been effective to above average students in teaching Mathematics. Hence the formulated hypothesis that ‘there is significant difference between the pre-test and the post-test scores in respect of above average students in the experimental group’ is accepted.

A glance at the mean values reveals the progress made by above average students in the experimental group. The above average students in the experimental group have made a mean gain of 5.90, (86.15-80.25=5.90). In terms of rate of progress, they have shown a rate to progress amounting to 7.35%. The improvement in the post-test mean values indicates that the Computer Assisted Activity Package (CAAP) is very effective above average students.

From the above it can be concluded that there is significant difference in the performance of the above average students in the experimental group between the pre-test and the post-test. Their performance in the post-test is far better than their performance in the pre-test. The above average students in each group have shown a marked progress in their post-test performance. Above average students have made much impressive mean gains amounting to 5.90 respectively. The above average students could evince a rate of progress amounting to 7.35% only.

In term of relative effectiveness of the applied strategies i.e. Computer Assisted Activity Package (CAAP) is just effective to above average students. This substantiates the effectiveness of computer assisted instruction in teaching Mathematics to above average students at Eighth standard level.

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5.1.11. COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF CONTROL GROUP AT PRE AND POST STAGE

Mean and standard deviation of Pre and Post test Scores of Average Control Group students and the calculated t-values are presented in table –5.11

TABLE: 5.11

COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF CONTROL GROUP AT PRE AND POST STAGE

<table>
<thead>
<tr>
<th>Control Group</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>46.50</td>
<td>2.24</td>
<td></td>
</tr>
<tr>
<td>Post Test</td>
<td>49.50</td>
<td>3.09</td>
<td>2.486 *</td>
</tr>
</tbody>
</table>

Note : * significant at 0.05 level

From table - 5.11, it can be observed that the t-values (2.48) obtained in respect of the average students respectively is significant at 0.05 level. There is significant difference in the performance of the average students between the pre-test and the post-test. Hence the formulated hypothesis that ‘there is no significant difference in the performance of the students between the pre-test and the post-test’ is rejected with regard to average students.

A scrutiny of mean values obtained by the students in various categories brings to light certain interesting revelations. The average students have made mean gains 3.0 respectively. In terms of rate of progress, they have shown rates of progress amounting to
6.4% respectively. It reveals that the traditional lecture method is just having significant effect in teaching Mathematics to the average students at Eighth standard level.

From the above it can be concluded that there is significant difference in the performance of average students in the control group between the pre-test and the post-test. It shows that the traditional lecture method, as an instructional strategy, could enable the average students in the control group to improve upon their pre-test score to certain extent. The analysis of this table indicates the need for introduction of innovative methods in teaching Mathematics to average students at Eighth standard level.

5.1.12. COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF EXPERIMENTAL GROUP AT PRE AND POST STAGE

Mean and standard deviation of Pre and Post test Scores of Average Experimental Group students and the calculated t-values are presented in table –5.12

**TABLE: 5.12**

**COMPARISON OF MEAN ACHIEVEMENT SCORES OF AVERAGE STUDENTS OF EXPERIMENTAL GROUP AT PRE AND POST STAGE**

<table>
<thead>
<tr>
<th>Control Group</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>48.10</td>
<td>3.49</td>
<td></td>
</tr>
<tr>
<td>Post Test</td>
<td>57.65</td>
<td>2.48</td>
<td><strong>7.05</strong></td>
</tr>
</tbody>
</table>

Note : ** significant at 0.01 level

From table –5.12, it can be seen that the t-values (7.05) obtained in respect of average students is significant at 0.01 level. The performance of average students in the
post-test is better than their performance in the pre-test. It implies that the applied instructional strategy has been effective to average students in teaching Mathematics. Hence the formulated hypothesis that ‘there is significant difference between the pre-test and the post-test scores in respect of average students in the experimental group’ is accepted.

A glance at the mean values reveals the progress made by average students in the experimental group. The average students have a mean gain of 9.55 (57.65 – 48.10 = 9.55). Their rate of progress amounts to 19%. The improvement in the post-test mean values indicates that the Computer Assisted Activity Package (CAAP) is very effective to average students.

From the above it can be concluded that there is significant difference in the performance of the average students in the experimental group between the pre-test and the post-test. Their performance in the post-test is far better than their performance in the pre-test. The average students in each group have shown a marked progress in their post-test performance. Average students have made much impressive mean gains amounting to 9.55 respectively. In terms of rate of progress, the average students with 19% rate of progress.

In term of relative effectiveness of the applied strategies i.e. Computer Assisted Activity Package (CAAP) is more effective to average students. This substantiates the effectiveness of computer assisted instruction in teaching Mathematics to average students at Eighth standard level.
5.1.13. COMPARISON OF MEAN ACHIEVEMENT SCORES OF CONTROL AND EXPERIMENTAL GROUP AS A WHOLE IN PRE STAGE

Mean and standard deviation of Pre test Scores of control and Experimental Group whole students and the calculated t-values are presented in table –5.13

TABLE: 5.13

COMPARISON OF MEAN ACHIEVEMENT SCORES OF CONTROL AND EXPERIMENTAL GROUP AS A WHOLE IN PRE STAGE

<table>
<thead>
<tr>
<th>Pre Test</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>51.33</td>
<td>21.91</td>
<td>0.04*</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>51.66</td>
<td>22.04</td>
<td></td>
</tr>
</tbody>
</table>

Note : @ not significant at 0.05 level.

By observing Table 5.13, it was evident that the pre-test mean achievement score of experimental group was 51.66 and the S.D. was 22.04. Whereas, the mean achievement score of control group was 53.33 and S.D was 21.91. The calculated ‘t’ value was 0.04 which was not significant 0.05 level. As there is no difference between mean scores, both groups prior to treatment phase they were equal.

It indicates that there is no variation in the achievement of the control group and the experimental group students in the pre-test performance. Hence the formulated hypothesis, ‘there is no significant difference between the pre-test mean scores of control group students and experimental group students as a whole’ is accepted.
From the above, it is concluded that, there is no significant difference between the control group and the experimental group students as a whole in the pre-test performance. Therefore, both groups were equal before the treatment phase. It implies that the control group and the experimental group as a whole were matched ones before the experiment.

5.1.14. COMPARISON OF MEAN ACHIEVEMENT SCORES OF CONTROL AND EXPERIMENTAL GROUP AS A WHOLE IN POST STAGE

Mean and standard deviation of Post test Scores of control and Experimental Group as a whole and the calculated t-values are presented in table –5.14

TABLE: 5.14

COMPARISON OF MEAN ACHIEVEMENT SCORES OF CONTROL AND EXPERIMENTAL GROUP AS A WHOLE IN POST STAGE

<table>
<thead>
<tr>
<th>Pre Test</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>53.66</td>
<td>16.6</td>
<td>4.61**</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>61.33</td>
<td>18.79</td>
<td></td>
</tr>
</tbody>
</table>

Note : ** significant at 0.01 level

From table – 514, it is evident that the obtained t –value (4.61) is significant at 0.01 level. It implies that the achievement of the experimental group students is higher than the achievement of the control group students. The experimental group students have very much improved upon their pre-test performance. Hence the formulated hypothesis that ‘there is significant difference between the post-test mean scores of the control group students and the experimental group students as a whole’ is accepted.
A critical study of the mean values reveals that the experimental group students are far ahead of the control group students. Both the groups were matched ones in the pre-test performance. But in the post-test, there is a significant variation between the two groups. The experimental group students have evinced tremendous progress in the post-test performance. The progress made by the experimental group students can be attributed to the effectiveness of the applied strategy i.e. Computer Assisted Activity Package (CAAP).

From the above analysis it can be concluded that there is significant difference in the post-test performance between the control group students and the experimental group students as a whole. The achievement of the experimental group students is higher than the achievement of the control group students. The progress made by the experimental group students in the post-test performance is the resultant product of the experimental treatment i.e. Computer Assisted Activity Package (CAAP). It substantiates the effectiveness of Computer Assisted Activity Package (CAAP) in teaching Mathematics at Eighth standard level. The control group and experimental group were matched ones before the experiment. After the experimental treatment, there is gulf of difference between the two groups. The gulf of difference between the control group and the experimental group bears testimony to the advantage of the computer assisted instruction over the traditional lecture method.

5.1.15. COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS CATEGORIES OF STUDENTS OF CONTROL GROUP AT PRE-STAGE

Mean and standard deviation of Pre test Scores of Various categories of students of Control Group and the calculated t-values are presented in table –5.15
TABLE: 5.15

COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS CATEGORIES OF STUDENTS OF CONTROL GROUP AT PRE STAGE

<table>
<thead>
<tr>
<th>Categories</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average Vs Average</td>
<td>80.15</td>
<td>3.76</td>
<td>46.50</td>
<td>2.24</td>
<td>24.31**</td>
</tr>
<tr>
<td>Above Average Vs Slow Learners</td>
<td>80.15</td>
<td>3.76</td>
<td>27.50</td>
<td>2.62</td>
<td>36.33**</td>
</tr>
<tr>
<td>Slow Learners Vs Average</td>
<td>27.50</td>
<td>2.62</td>
<td>46.50</td>
<td>2.24</td>
<td>17.43**</td>
</tr>
</tbody>
</table>

Note : ** significant at 0.01 level.

From the table – 5.15, it can be observed that the obtained t-values (24.31, 36.33, and 17.43) are significant at 0.01 level. It implies there is variation in the pre-test performance among the various categories of students in the control group. There is a gradation in the achievement in tune with the classification of categories. Hence the formulated hypothesis that ‘there is a significant difference in the pre-test performance among the various categories of students i.e. above average students, average students and slow learners is accepted.

A close scan of the mean values obtained by each category of the students reveals that the above average students are far ahead of the other two categories of students. They evince marked supremacy over the students of other two categories. Though trailing behind the above average students, the average students are better than the slow learners in the pre-test performance. There is a gulf of difference between the slow learners and the other two categories of students. The slow learners could not even get a pass score.
The above analysis gives the conclusion that there is significant difference in the pre-test performance among the various categories of students in the control group. The above average students are on the lead followed by average students. But the difference between the two categories is very significant. The slow learners are at the lowest rung. There is a vast gulf of difference between them and the students of other two categories. From the mean values it can be inferred that the traditional lecture is effective to the above average students only. It is not at all effective to slow learners. The average students also have got only moderate effect. It justifies the need for this study.

5.1.16. COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS CATEGORIES OF STUDENTS OF CONTROL GROUP AT POST STAGE

Mean and standard deviation of Post test Scores of Various categories of students of Control Group and the calculated t-values are presented in table – 5.16

**TABLE: 5.16**

**COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS CATEGORIES OF STUDENTS OF CONTROL GROUP AT POST STAGE**

<table>
<thead>
<tr>
<th>Categories</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average Vs Average</td>
<td>82.25</td>
<td>3.54</td>
<td>49.50</td>
<td>3.00</td>
<td>22.31**</td>
</tr>
<tr>
<td>Above Average Vs Slow Learners</td>
<td>82.25</td>
<td>3.54</td>
<td>29.5</td>
<td>1.74</td>
<td>42.28**</td>
</tr>
<tr>
<td>Slow Learners Vs Average</td>
<td>29.5</td>
<td>1.74</td>
<td>49.50</td>
<td>3.00</td>
<td>18.23**</td>
</tr>
</tbody>
</table>

Note : ** significance at 0.01 level
From table – 5.16, it is observed that the obtained t-values (22.31, 42.28, and 18.23) are significant at 0.01 level. It shows that there is a variation in the post-test performance among the various categories of students in the control group. The achievement of the above average students is better than the achievement of the students in the other two categories. Therefore the formulated hypothesis that ‘there is a significant difference in the post-test performance among the various categories of students i.e. the above average students, average students and the slow learners in the control group’ is accepted.

A glimpse at the mean values obtained in the post-test by the each category of students reveals that all the students have improved upon their score in the post-test. Despite the vertical progress made by the slow learners and the average students, the difference that existed between them and the above average students in the pre-test continues in the post-test also. The graded level of performance is evident in the post-test. Though the slow learners have improved upon their score, they could not narrow down the difference in the post-test performance.

The above analysis gives the conclusion that there is significant difference in the post-test performance among the various categories of students in the control group. Despite the progress made by the slow learners and the average students, they could not cope with the above average students. So the difference that existed between them and the above average students continued in the post test stage also. The continuance of the gulf of difference between the above average students and the students of other two categories indicates the need for innovative instructional strategy i.e. Computer Assisted Activity Package (CAAP) for all the categories of students.
5.1.17. COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN
VARIOUS CATEGORIES OF STUDENTS OF EXPERIMENTAL GROUP AT
PRE STAGE

Mean and standard deviation of Pre test Scores of Various categories of students
of Experimental Group and the calculated t-values are presented in table – 5.17

TABLE: 5.17

COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS
CATEGORIES OF STUDENTS OF EXPERIMENTAL GROUP AT PRE STAGE

<table>
<thead>
<tr>
<th>Categories</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>Calculated t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average Vs Average</td>
<td>80.15</td>
<td>3.52</td>
<td>48.10</td>
<td>3.49</td>
<td>20.44**</td>
</tr>
<tr>
<td>Above Average Vs Slow Learners</td>
<td>80.15</td>
<td>3.52</td>
<td>27.40</td>
<td>2.56</td>
<td>38.22**</td>
</tr>
<tr>
<td>Average Vs Slow Learners</td>
<td>48.10</td>
<td>3.49</td>
<td>27.40</td>
<td>2.56</td>
<td>15.12**</td>
</tr>
</tbody>
</table>

Note: ** significant at 0.01 level.

From the table – 5.17, it can be observed that the obtained t-values (20.44, 38.32, and 15.12) are significant at 0.01 level. It implies there is variation in the pre-test performance among the various categories of students in the experimental group. There is a gradation in the achievement in tune with the classification of categories. Hence the formulated hypothesis that ‘there is a significant difference in the pre-test performance among the experimental various categories of students i.e. above average students, average students and slow learners’ is accepted.
A close scan of the mean values obtained by each category of the students reveals that the above average students are far ahead of the other two categories of students. They evince marked supremacy over the students of other two categories. Though trailing behind the above average students, the average students are better than the slow learners in the pre-test performance. There is a gulf of difference between the slow learners and the other two categories of students. The slow learners could not even get a pass score.

The above analysis gives the conclusion that there is significant difference in the pre-test performance among the various categories of students in the experimental group. The above average students are on the lead followed by average students. But the difference between the two categories is very significant. The slow learners are at the lowest rung. There is a vast gulf of difference between them than the students of other two categories. From the mean values it can be inferred that the traditional lecture is effective to the above average students only. It is not at all effective to slow learners. The average students also have got only moderate effect. It justifies the need for this study.

5.1.18. COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS CATEGORIES OF STUDENTS OF EXPERIMENTAL GROUP AT POST STAGE

Mean and standard deviation of Post test Scores of Various categories of students of Experimental Group and the calculated t-values are presented in table –5.18
TABLE: 5.18

COMPARISON OF MEAN ACHIEVEMENT SCORES BETWEEN VARIOUS CATEGORIES OF STUDENTS OF EXPERIMENTAL GROUP AT POST STAGE

<table>
<thead>
<tr>
<th>Categories</th>
<th>Mean</th>
<th>S.D</th>
<th>Mean</th>
<th>S.D</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above Average Vs Average</td>
<td>86.15</td>
<td>2.45</td>
<td>57.65</td>
<td>2.48</td>
<td>25.85**</td>
</tr>
<tr>
<td>Above Average Vs Slow Learners</td>
<td>86.15</td>
<td>2.45</td>
<td>41.75</td>
<td>2.49</td>
<td>40.19**</td>
</tr>
<tr>
<td>Slow Learners Vs Average</td>
<td>41.75</td>
<td>2.49</td>
<td>57.65</td>
<td>2.48</td>
<td>14.30**</td>
</tr>
</tbody>
</table>

Note: ** significance at 0.01 level

From table – 5.18, it is observed that the obtained t-values (25.85, 40.19, and 14.30) are significant at 0.01 level. It shows that there is a variation in the post-test performance among the various categories of students in the experimental group. Therefore the formulated hypothesis that ‘there is a significant difference in the post-test performance among the various categories of students i.e. the above average students, average students and the slow learners in the experimental group’ is accepted.

A glimpse at the mean values obtained in the post-test by the each category of students reveals that all the students have improved upon their score in the post-test. Despite the vertical progress made by the slow learners and the average students, the difference that existed between them and the above average students in the pre-test continues in the post-test also. The graded level of performance is evident in the post-test.
The above analysis gives the conclusion that there is significant difference in the post-test performance among the various categories of students in the experimental group. Despite the progress made by the slow learners and the average students, they could not cope with the above average students. So the difference that existed between them and the above average students continued after the experiment also. But, slow learners have shown marked improvement upon their score in the post-test performance. The values prove that the slow learners had improved much more than the other categories of students when taught through Computer Assisted Activity Package.

The continuance of the gulf of difference in the achievement of the slow learners and the students of other two categories indicates that the applied instructional strategy i.e. Computer Assisted Activity Package (CAAP) is equally effective for all the categories of students and that too very effective for Slow learners.

5.1.19. MEAN GAIN SCORE ANALYSIS OF SLOW LEARNERS OF CONTROL AND EXPERIMENTAL GROUP

Mean gain score analysis of pre and Post test Scores of control and Experimental Group slow learners values are presented in table –5.19

**TABLE: 5.19**

<table>
<thead>
<tr>
<th>MEAN GAIN SCORE ANALYSIS OF SLOW LEARNERS OF CONTROL AND EXPERIMENTAL GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>----</td>
</tr>
<tr>
<td>Control Group</td>
</tr>
<tr>
<td>Experimental Group</td>
</tr>
</tbody>
</table>
From the table 5.19, it has been observed that the obtained t value 12.22 is significant at 0.01 level. It is reveals that there is a significant difference in the mean gain scores of the slow learners of control and experimental group middle school students. It ascertains that the experimental group has improved because of the treatment to the remarkable extent than the control group. Thus, the hypothesis “There is a significant difference in the mean gain scores of the achievement of slow learners of control and experimental group is accepted.

Further, the mean gain scores of achievement of slow learners of control and experimental group are 2.00 and 19.75 respectively. It is evident from the gain score experimental group is much higher than the control group which proves that the applied Computer Assisted Activity Package was found to be effective over traditional lecture method for slow learners.

To conclude that there is a significant difference between the mean gain scores of the achievement of slow learners of control and experimental group Middle School Slow Learners. Thus the study evinced that the computer assisted activity package has evinced significant enhancement in learning among experimental group slow learners. On the other hand, the control group slow learners also improved in their learning through traditional teaching method. When the mean gain scores of control (mean gain score-2.00) and experimental group (mean gain score-19.75) were compared the effectiveness of computer assisted activity package was significantly evinced. The results show that the computer assisted activity package has instilled interest among slow learners. They are more active in learning situations because of CAAP package. The concepts were explained in a more easy and attractive manner. As it provided opportunity for individualized learning, it results to ameliorate their learning process. This method helped the slow learners to learn the mathematical concepts at their own phase. The
students felt free and relaxed readiness to learn themselves and provided and impetus to
learn and to manifest their best. It provided an opportunity for the slow learners to
develop mastery over learning. Self-learning with Self-checking and self correction
among slow learners is also enhanced through computer assisted activity package. Thus,
this study evinced a significant effectiveness of computer assisted activity package in
learning mathematical concepts by middle school slow learners.

5.1.20. MEAN GAIN SCORE ANALYSIS OF ABOVE AVERAGE STUDENTS OF
CONTROL AND EXPERIMENTAL GROUP

Mean gain score analysis of pre and Post test Scores of control and Experimental
Group slow learners values are presented in table –5.20

TABLE: 5.20

MEAN GAIN SCORE ANALYSIS OF ABOVE AVERAGE STUDENTS OF
CONTROL AND EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Gain Scores</th>
<th>Standard Deviation</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>10</td>
<td>2.06</td>
<td>1.43</td>
<td>4.32*</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>10</td>
<td>5.90</td>
<td>2.42</td>
<td></td>
</tr>
</tbody>
</table>

From the table 5.20, it has been observed that the obtained t value 4.32 is
significant at 0.05 level. It is reveals that there is a significant difference in the mean gain
scores of the above average students of control and experimental group middle school
students. It ascertains that the experimental group has improved because of the treatment
to the remarkable extent than the control group. Thus, the hypothesis “There is a
significant difference in the mean gain scores of the achievement of above average
students of control and experimental group is accepted.

Further, the mean gain scores of achievement of above average students of control
and experimental group are 2.06 and 5.90 respectively. It is evident from the gain score
experimental group is just higher than the control group which proves that the applied
Computer Assisted Activity Package was found to be effective over traditional lecture
method for above average students.

To conclude that there is a significant difference between the mean gain scores of
the achievement of above average students of control and experimental group Middle
School above average students.

5.1.21. MEAN GAIN SCORE ANALYSIS OF AVERAGE STUDENTS OF
CONTROL AND EXPERIMENTAL GROUP

Mean gain score analysis of pre and Post test Scores of control and Experimental Group
average students values are presented in table –5.20

TABLE: 5.21

MEAN GAIN SCORE ANALYSIS OF AVERAGE STUDENTS OF CONTROL
AND EXPERIMENTAL GROUP

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean Gain Scores</th>
<th>Standard Deviation</th>
<th>Critical Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group</td>
<td>10</td>
<td>3.00</td>
<td>1.73</td>
<td>5.84*</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>10</td>
<td>9.55</td>
<td>3.09</td>
<td></td>
</tr>
</tbody>
</table>
From the table 5.21, it has been observed that the obtained t value 5.84 is significant at 0.05 level. It is reveals that there is a significant difference in the mean gain scores of the average students of control and experimental group middle school students. It ascertains that the experimental group has improved because of the treatment to the remarkable extent than the control group. Thus, the hypothesis “There is a significant difference in the mean gain scores of the achievement of average students of control and experimental group is accepted.

Further, the mean gain scores of achievement of average students of control and experimental group are 3.00 and 9.55 respectively. It is evident from the gain score experimental group is just higher than the control group which proves that the applied Computer Assisted Activity Package was found to be effective over traditional lecture method for average students.

To conclude that there is a significant difference between the mean gain scores of the achievement of average students of control and experimental group Middle School students.

5.2 OPINIONS REGARDING CAAP PACKAGE.

After the treatment phase, an opinionnaire was given to the students’ of the experimental group to get the feedback regarding Computer Assisted Activity Package (CAAP). Student’s opinions were collected. Opinionnaire contained ten statements, in which five were positive statements and the rest five were negative statements. It was a three point rating scale, the three points being 'agree', 'undecided' and 'disagree'. The code numbers 1, 2 and 3 were given to the points 'agree', 'undecided' and 'disagree' respectively as nominal scale. After counting the frequencies the analysis was done employing Chi-Square technique. The results are presented in Table No. 5.20

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Table 5.22

CHI-SQUARE VALUE OF OPINIONS REGARDING CAAP PACKAGE ACCORDING TO EXPERIMENTAL GROUP (TOTAL RESPONSE)

<table>
<thead>
<tr>
<th>No</th>
<th>Statement</th>
<th>F0</th>
<th></th>
<th>'Undecided'</th>
<th>Disagree</th>
<th>Chi – Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fe</td>
<td>Agree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Like to learn other subjects by this method.</td>
<td>9</td>
<td>18</td>
<td>7</td>
<td>2</td>
<td>14.889*</td>
</tr>
<tr>
<td>2</td>
<td>It is difficult to understand the subject by this method.</td>
<td>9</td>
<td>1</td>
<td>11</td>
<td>15</td>
<td>11.556*</td>
</tr>
<tr>
<td>3</td>
<td>It is difficult to remember the subject matter learnt by this method.</td>
<td>9</td>
<td>1</td>
<td>11</td>
<td>15</td>
<td>12.667*</td>
</tr>
<tr>
<td>4</td>
<td>It is tiresome to learn through this method.</td>
<td>9</td>
<td>1</td>
<td>4</td>
<td>22</td>
<td>32.889*</td>
</tr>
<tr>
<td>5</td>
<td>Concentration increases by learning through this method.</td>
<td>9</td>
<td>12</td>
<td>13</td>
<td>2</td>
<td>8.222*</td>
</tr>
<tr>
<td>6</td>
<td>This method of learning is more interesting than the traditional method.</td>
<td>9</td>
<td>23</td>
<td>3</td>
<td>1</td>
<td>32.889*</td>
</tr>
<tr>
<td>7</td>
<td>This method of learning is more interesting than the traditional method.</td>
<td>9</td>
<td>2</td>
<td>22</td>
<td>3</td>
<td>28.222*</td>
</tr>
<tr>
<td>8</td>
<td>Tension / Stress is experienced while learning through this method.</td>
<td>13.5</td>
<td>0</td>
<td>7</td>
<td>20</td>
<td>6.259*</td>
</tr>
<tr>
<td>9</td>
<td>Even self-learning is possible by this method.</td>
<td>13.5</td>
<td>26</td>
<td>0</td>
<td>1</td>
<td>23.148*</td>
</tr>
<tr>
<td>10</td>
<td>Like to learn occasionally by this method.</td>
<td>13.5</td>
<td>19</td>
<td>7</td>
<td>1</td>
<td>18.667*</td>
</tr>
</tbody>
</table>

Note:*Significant at 0.01 level
By studying the table 5.12, it is derived that the chi-square value of all the statements were significant at 0.01 levels. The Chi-Square value of statement 1 is 14.889 and is significant at 0.01 level. It is indicating that the students were in favour to learn other subjects by this method. The obtained Chi-Square value of statement 2 is 11.556 and is significant at 0.01 levels. It indicates that the students felt no difficulty in understanding the subject through this method. The Chi-Square value of statement 3 is also significant (12.667). It clarifies that the students experienced it easy to remember the subject learnt by this method. For statement 4 the Chi-Square value is 32.889. It is significant at level of 0.01. It indicates that the students didn't find it tiresome to learn through this method. Statement 5 is significant at 0.01 level, its Chi-Square value is 8.222. It shows that the students were of the view that their concentration increased by learning through this method. On the other hand, the Chi-Square value of statement 6 is 32.889. It is also significant at 0.01 levels. It expressed that this method of learning was more interesting than the traditional learning method. The Chi-Square value of statement 7 is 28.222 and it is highly significant too. It was noted by the students that the classroom discipline was maintained while learning through this method. Statement 8 is also significant. Its Chi-Square value is 6.259. It shows that the students did not experience tension or stress during learning through this method. By studying the statement 9 it derived that the Chi-Square value of this statement is significant. According to the students it is convenient for self-learning through this method. Its Chi-Square value is 23.148. For statement 10, the Chi-Square value is 18.667. It is significant at 0.01 level. The students agreed regarding occasional learning through this method. Thus, on the basis of the observed frequencies, it can be noted that the students responded favourably towards learning through Computer Assisted Activity Package (CAAP).
It is observed with the analysis of the opinionnaire that learning become more interesting and lively by Computer Assisted Activity Package (CAAP). And students’ opinions were noted favourable towards the Computer Assisted Activity Package (CAAP).

5.3. AN OVERVIEW OF THE RESULTS

- There is no significant difference between the control group and the experimental group slow learners in the pre-test performance. Therefore, both groups were equal before the treatment phase. It implies that the control group and the experimental group in the present study were matched ones before the experiment.

- There is a significant difference in the post-test performance between the control group slow learners and the experimental group slow learners. The achievement of the experimental group slow learners is higher than the achievement of the control group slow learners. The progress made by the experimental group slow learners in the post-test performance is the resultant product of the experimental treatment i.e. Computer Assisted Activity Package (CAAP). It substantiates the effectiveness of Computer Assisted Activity Package (CAAP) in teaching Mathematics at Eighth standard level. The control group and experimental group were matched ones before the experiment. After the experimental treatment, there is gulf of difference between the two groups. The gulf of difference between the control group and the experimental group bears testimony to the advantage of the computer assisted instruction over the traditional lecture method.

- There is no significant difference between the above average students in the control group and the experimental group. The above average students in both the groups have evinced same degree of achievement in the pre-test. Above average students in the control group are on par with their counterparts in the experimental
group in the pre-test performance. It bears testimony to matching of the groups and it substantiates the reliability of classification of students into above average in both the groups.

- There is a significant difference between the post-test mean scores of above average students in both the groups. The achievement of above average students in the experimental group is higher than the achievement of their respective counterparts in the control group. The progress made by above average students in the experimental group can be attributed to the effectiveness of the applied instructional strategy i.e. Computer Assisted Activity Package (CAAP). The above average students in both the groups were matched ones before the experiment. But after the experimental treatment, there is a gulf of difference between both groups. The gulf of difference between above average students in the control group and the experimental group beings to light the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

- There is no significant difference between the average students in the control group and the experimental group. The average students in both the groups have evinced same degree of achievement in the pre-test. Average students in the control group are on par with their counterparts in the experimental group in the pre-test performance. It bears testimony to matching of the groups and it substantiates the reliability of classification of students into average in both the groups.

- There is a significant difference between the post-test mean scores of average students in both the groups. The achievement of average students in the experimental group is higher than the achievement of their respective counterparts
in the control group. The progress made by average students in the experimental group can be attributed to the effectiveness of the applied instructional strategy i.e. Computer Assisted Activity Package (CAAP). The average students in both the group were matched ones before the experiment. But after the experimental treatment, there is a gulf of difference between both groups. The gulf of difference between average students in the control group and the experimental group brings to light the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

- There is a significant difference in the performance of slow learners of students in the control group between the pre-test and the post-test. It shows that the traditional lecture method, as an instructional strategy, could enable the slow learners of control group to improve upon their pre-test score. Thought it has been effective for the slow learners, it cannot be said that it has been very effective. This can be understood from the meagre percentage of the rate of progress shown by them.

- There is a significant difference in the performance of the slow learners in the experimental group between the pre-test and the post-test. Their performance in the post-test is far better than their performance in the pre-test. The slow learners in each group have shown a marked progress in their post-test performance. Slow learners have made much impressive mean gains amounting to 19.75 respectively. In terms of rate of progress, the slow learners stand first showing 52.4%. In term of relative effectiveness of the applied strategies i.e. Computer Assisted Activity Package (CAAP) is most effective to the slow learners. This substantiates the effectiveness of computer assisted instruction in teaching Mathematics to slow learners at Eighth standard level. Further, a comparison of table –5.7 and table –
5.8 brings to light the advantage of Computer Assisted Activity Package (CAAP) over the traditional lecture method.

- There is no significant difference in the performance of above average students in the control group between the pre-test and the post-test. It shows that the traditional lecture method, as an instructional strategy, could not enable the above average students in the control group to improve upon their pre-test score. The analysis of this table indicates the need for introduction of innovative methods in teaching Mathematics to above average students at Eighth standard level.

- There is a significant difference in the performance of the above average students in the experimental group between the pre-test and the post-test. Their performance in the post-test is far better than their performance in the pre-test. The above average students in each group have shown a marked progress in their post-test performance. Above average students have made much impressive mean gains amounting to 5.90 respectively. The above average students could evince a rate of progress amounting to 7.35% only. In term of relative effectiveness of the applied strategies i.e. Computer Assisted Activity Package (CAAP) is just effective to above average students. This substantiates the effectiveness of computer assisted instruction in teaching Mathematics to above average students at Eighth standard level.

- There is a significant difference in the performance of average students in the control group between the pre-test and the post-test. It shows that the traditional lecture method, as an instructional strategy, can have a meagre impact on the average students in the control group to improve upon their pre-test score. The analysis of this table indicates the need for introduction of innovative methods in teaching Mathematics to average students at Eighth standard level.
There is a significant difference in the performance of the average students in the experimental group between the pre-test and the post-test. Their performance in the post-test is far better than their performance in the pre-test. The average students in each group have shown a marked progress in their post-test performance. Average students have made much impressive mean gains amounting to 9.55 respectively when compared with above average. In terms of rate of progress, the average students with 19% rate of progress. In term of relative effectiveness of the applied strategies i.e. Computer Assisted Activity Package (CAAP) is more effective to average students. This substantiates the effectiveness of computer assisted instruction in teaching Mathematics to average students at Eighth standard level.

There is no significant difference between the control group and the experimental group students as a whole in the pre-test performance. Therefore, both groups were equal before the treatment phase. It implies that the control group and the experimental group in the present study were matched ones before the experiment.

There is a significant difference in the post-test performance between the control group students and the experimental group students as a whole. The achievement of the experimental group students is higher than the achievement of the control group students. The progress made by the experimental group students in the post-test performance is the resultant product of the experimental treatment i.e. Computer Assisted Activity Package (CAAP). It substantiates the effectiveness of Computer Assisted Activity Package (CAAP) in teaching Mathematics at Eighth standard level. The control group and experimental group were matched ones before the experiment. After the experimental treatment, there is gulf of difference between the two groups. The gulf of difference between the control group and the
experimental group bears testimony to the advantage of the computer assisted instruction over the traditional lecture method.

- There is a significant difference in the pre-test performance among the various categories of students in the control group. The above average students are on the lead followed by average students. But the difference between the two categories is very significant. The slow learners are at the lowest rung. There is a vast gulf of difference between them and the students of other two categories. From the mean values it can be inferred that the traditional lecture is effective to the above average students only. It is not at all effective to slow learners. The average students also have got only moderate effect. It justifies the need for this study.

- There is a significant difference in the post-test performance among the various categories of students in the control group. Despite the progress made by the slow learners and the average students, they could not cope with the above average students. So the difference that existed between them and the above average students continued in the post test stage also. The continuance of the gulf of difference between the above average students and the students of other two categories indicates the need for innovative instructional strategy i.e. Computer Assisted Activity Package (CAAP) for all the categories of students.

- There is a significant difference in the pre-test performance among the various categories of students in the experimental group. The above average students are on the lead followed by average students. But the difference between the two categories is very significant. The slow learners are at the lowest rung. There is a vast gulf of difference between them and the students of other two categories. From the mean values it can be inferred that the traditional lecture is effective to the above average students only. It is not at all effective to slow learners. The
average students also have got only moderate effect. It justifies the need for this study.

❖ There is a significant difference in the post-test performance among the various categories of students in the experimental group. A close look at the mean values revealed that the progress made by the slow learners is much higher when compared with above average and average students. Thus it is proved that the computer assisted activity package is more effective to the slow learners when compared with other categories of students.

❖ There exists a significant difference between the mean gain scores of the achievement of slow learners of control and experimental group Middle School Slow Learners.

❖ There exists a significant difference between the mean gain scores of the achievement of control and experimental group above average students at Middle School level.

❖ There exists a significant difference between the mean gain scores of the achievement of control and experimental group average students at Middle School level.

❖ An opinionnaire was given to the students’ of the experimental group to get the feedback regarding Computer Assisted Activity Package (CAAP). After counting the frequencies the analysis was done employing Chi-Square technique. The results are presented in Table No. 5.12. By studying the table 5.12, it is derived that the chi-square value of all the statements were significant at 0.01 levels. The Chi-Square value of statement 1 is 14.889 and is significant at 0.01 level. It is indicating that the students were in favour to learn other subjects by this method. The obtained Chi-Square value of statement 2 is 11.556 and is significant at 0.01
levels. It indicates that the students felt no difficulty in understanding the subject through this method. The Chi-Square value of statement 3 is also significant (12.667). It clarifies that the students experienced it easy to remember the subject learnt by this method. For statement 4 the Chi-Square value is 32.889. It is significant at level of 0.01. It indicates that the students didn't find it tiresome to learn through this method. Statement 5 is significant at 0.01 level, its Chi-Square value is 8.222. It shows that the students were of the view that their concentration increased by learning through this method. On the other hand, the Chi-Square value of statement 6 is 32.889. It is also significant at 0.01 levels. It expressed that this method of learning was more interesting than the traditional learning method. The Chi-Square value of statement 7 is 28.222 and it is highly significant too. It was noted by the students that the classroom discipline was maintained while learning through this method. Statement 8 is also significant. Its Chi-Square value is 6.259. It shows that the students did not experience tension or stress during learning through this method. By studying the statement 9 it derived that the Chi-Square value of this statement is significant. According to the students it is convenient for self-learning through this method. Its Chi-Square value is 23.148. For statement 10, the Chi-Square value is 18.667. It is significant at 0.01 level. The students agreed regarding occasional learning through this method. Thus, on the basis of the observed frequencies, it can be noted that the students responded favourably towards learning through Computer Assisted Activity Package (CAAP).

- It is observed with the analysis of the opinionnaire that learning become more interesting and lively by Computer Assisted Activity Package (CAAP). And
students' demonstrated positive opinions towards the Computer Assisted Activity Package (CAAP).

5.4 DISCUSSION OF THE RESULTS OBTAINED

To examine the effectiveness of Computer in teaching Mathematics, the Computer Assisted Activity Package (CAAP) was developed to teach selected portion of mathematics to the slow learners of Class VIII. It was proved effective in terms of the students' academic achievement among slow learners. This study revealed that Computer Assisted Activity Package (CAAP) was found to be most effective in teaching slow learners. They are motivated and interested in learning through Computer Assisted Activity package. Eventhough, a perfect teacher cannot be replaced by any technology, the Computer Assisted Activity Package (CAAP) was found to be effective in the education of slow learners as it allows them to learn on their own pace.

The students responded positively towards learning through Computer Assisted Activity Package (CAAP). They wished to learn other subjects through this method. They experienced it more convenient, easy to understand and more interesting. It helps them to grasp the content easily for a longer period of time. According to the observation it increases concentration, and its leads to self learning.

Summary and Suggestions are presented in the succeeding chapter.