CHAPTER VI

FINDINGS, CONCLUSIONS AND SUGGESTIONS

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6.1 STUDY IN RETROSPECT

The study was conducted to find out the effectiveness of Animated and Static visuals based Instructional Strategies on Achievement in Basic Science of students at Upper Primary Level. A brief description of the procedure followed in the study, summary of important findings, recommendations for further improvement of educational practices and suggestions for further research are included in this chapter.

6.1.1 Restatement of the Problem

The study was aimed to determine the effectiveness of Animated and Static visuals based Instructional Strategies on the Achievement in Basic Science of students at Upper Primary level. Hence the topic of the study is entitled “EFFECTIVENESS OF ANIMATED AND STATIC VISUALS BASED INSTRUCTIONAL STRATEGIES ON ACHIEVEMENT IN BASIC SCIENCE OF STUDENTS AT UPPER PRIMARY LEVEL”.

6.1.2 Objectives of the study

The major objectives of the study were:

1. To find out the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and
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Conventional Activity Oriented Method on Achievement in Basic Science of students at Upper Primary Level.

2. To compare the effectiveness of Animated and Static Visuals Based instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method on Achievement in Basic Science of students at Upper Primary Level.

3. To find out the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method on Achievement in Basic Science of students at Upper Primary Level with regard to the categories of objectives- Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

4. To compare the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method on Achievement in Basic Science of students at Upper Primary Level with regard to the categories of objectives- Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

5. To find out the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and
Conventional Activity Oriented Method in developing Attitude towards Science of students at Upper Primary Level.

6. To compare the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method in developing Attitude towards Science of students at Upper Primary Level.

7. To find out the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method in developing Interest in Science of students at Upper primary Level.

8. To compare the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method in developing Interest in Science of students at Upper Primary Level.

9. To find out the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and Conventional Activity Oriented Method on retention of Achievement in Basic Science of students at Upper Primary Level.

10. To compare the effectiveness of Animated and Static Visuals based Instructional Strategy, Static Visuals based Instructional Strategy and
Conventional Activity Oriented Method on retention of Achievement in Basic Science of students at Upper Primary Level.

### 6.1.3 Hypotheses of the Study

The following hypotheses were formulated for the study:

1. **The Achievement in Basic Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of Students taught using Conventional Activity Oriented Method.**

2. **The Achievement in Basic Science of Students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of Students taught using Conventional Activity Oriented Method.**

3. **The Achievement in Basic Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of Students taught using Static Visuals based Instructional Strategy.**

4. **The Achievement in Basic Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of Students taught using Conventional Activity Oriented Method with regard to the categories of objectives-**
Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

5. The Achievement in Basic Science of Students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of Students taught using Conventional Activity Oriented Method with regard to the categories of objectives-Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

6. The Achievement in Basic Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of Students taught using Static Visuals based Instructional Strategy with regard to the categories of objectives-Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

7. The Attitude towards Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

8. The Attitude towards Science of students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly
higher than that of students taught using Conventional Activity Oriented Method.

9. The Attitude towards Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

10. The Interest in Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

11. The Interest in Science of Students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

12. The Interest in Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

13. The retention of Achievement in Basic Science of Students at Upper Primary Level taught using Animated and Static Visuals based
Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

14. The retention of Achievement in Basic Science of Students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

15. The retention of Achievement in Basic Science of Students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

6.1.4 Methodology in Brief

Experimental method was used to conduct the present study. The design selected was pre-test post-test non-equivalent group design (Best & Khan, 2011).

Sample selected for the study

The sample for the study were selected from Manjathul Aitham Orphanage U.P.S. (M.A.O.U.P.S.), Elayur, Malappuram District. The study was conducted on a final sample of 159 students belonged to three divisions of Standard VII (N = 53 in each group).
Tools used in the study

The tools used in the study for the collection of data were:

i. Lesson transcripts on Animated and Static Visuals based Instructional Strategy.

ii. Lesson transcripts on Static Visuals based Instructional Strategy.

iii. Lesson transcripts on Conventional Activity Oriented Method.

iv. Achievement test in Basic Science.


vi. Science Interest Inventory.

vii. Non-Verbal Intelligence Test.

Procedure Adopted in the Study

Since the intention of the study was to find out the effectiveness of Strategies based on Animated and Static Visuals for teaching Basic Science, the experimental method was found to be the best method to conduct the research. The previous achievement in Basic Science and General Intelligence of the total sample were compared before the experimental treatments. Out of the three groups selected for the study, two groups were considered as Experimental Groups and the third one as the Control Group. Before the experimentation, an Achievement test in Basic Science, Science Attitude Scale and Science Interest Inventory were administered in all the groups as pre-tests. Then the groups were subjected to the experimental procedures and
the Experimental Group I was taught using Animated and Static Visuals based Instructional Strategy, Experimental Group II by using Static Visuals based Instructional Strategy and the Control Group was taught in the Conventional Activity Oriented Method. When the experiment was over, the same Achievement test, Science Attitude Scale and Science Interest Inventory were again administered to all the groups as post-tests. The pre-test and post-test scores were subjected to analysis by using appropriate statistical techniques. Finally, a delayed achievement test was used as the retention test. Here the same Achievement test was used, but the questions were reworded and rearranged. It was administered one month after the post test.

6.2 MAJOR FINDINGS OF THE STUDY

The major findings of the study are presented under the following heads:

6.2.1 Comparison of Achievement in Basic Science (total score).

6.2.2 Comparison of Achievement in Basic Science under the Objective-Knowledge.

6.2.3 Comparison of Achievement in Basic Science under the Objective-Understanding.

6.2.4 Comparison of Achievement in Basic Science under the Objective-Application.
6.2.5 Comparison of Achievement in Basic Science under the Objective-Analysis.

6.2.6 Comparison of Achievement in Basic Science under the Objective-Synthesis.

6.2.7 Comparison of Achievement in Basic Science under the Objective-Evaluation.

6.2.8 Comparison of Attitude towards Science.

6.2.9 Comparison of Interest in Science.

6.2.10 Comparison of retention of Achievement in Basic Science.

**6.2.1 Comparison of Achievement in Basic Science (total score).**

6.2.1.1 Comparison of the post-test scores of students in the Experimental and Control Groups with regard to Achievement in Basic Science showed that the Experimental and Control Groups differ significantly. The critical ratios obtained are 12.562 for EXP I and CON, 4.086 for EXP II and CON and 7.404 for EXP I and EXP II. All these values are significant at 0.01 level. This reveals that the Animated and Static Visuals based Instructional Strategy is more effective in teaching Basic Science than the Conventional Activity Oriented Method.
6.2.1.2 The Analysis of Variance of the pre–test and post-test scores on Achievement in Basic Science revealed that there was no significant difference between the mean pre-test scores of the Experimental and Control Groups (Fx= 0.010). But there exists significant difference between the means of post-test scores of the groups under study (Fy=71.494) and is significant at 0.01 level. It shows that the groups differ significantly in their post-test scores on Achievement in Basic Science.

6.2.1.3 The analysis of Covariance of pre-test and post–test scores on Achievement in Basic Science revealed that the difference between the means of post–test scores of Experimental and Control Groups are significant at 0.01 level of significance (Fyx=824.82).

6.2.1.4 Comparison of the adjusted means of the post-test scores on Achievement in basic science showed significant difference between the groups under study at 0.01 level of significance. The obtained ‘t’ values are 40.300 for EXP I and CON,14.431 for EXP II and CON and 25.830 for EXP I and EXP II. Since the adjusted means of both the Experimental Groups are significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior on Achievement in Basic Science. The analysis also leads to the conclusion that, among the Experimental Groups, the adjusted means of Experimental Group I (EXP I) is significantly higher than that of Experimental Group II (EXP II). Therefore it
can be concluded that Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than the Static Visuals based Instructional Strategy (EXP II), with regard to achievement in Basic Science.

6.2.1.5 Comparison of the gain scores on Achievement in Basic Science showed that the Experimental and Control Groups differed significantly. The critical ratios obtained are 22.165 for EXP-I and CON, 6.957 for EXP II and CON and 12.527 for EXP I and EXP II and all are significant at 0.01 level. The mean gain scores of the Experimental Groups are higher than that of the Control Group on Achievement in Basic Science. From this it is clear that the Experimental Instructional Strategies are superior to the Conventional Activity Oriented Method with regard to total Achievement in Basic Science. The comparison of mean gain scores also revealed that the Animated and Static Visuals based Instructional Strategy is more effective in teaching Basic Science than the Static Visuals based Instructional Strategy and the Conventional Activity Oriented Method.

6.2.2 Comparison of Achievement in Basic Science under the objective-Knowledge.

6.2.2.1 Comparison of the post-test scores of the Experimental and Control Groups with respect to Achievement in Basic Science under the objective-Knowledge revealed that the groups showed significant difference. The Critical ratios obtained are 9.073 for EXP I and CON, 4.222 for EXP II and
CON and 6.281 for EXP I and EXP II and all are significant at 0.01 level. Hence it can be concluded that the Experimental Groups are more advantageous than the Control Group with respect to Achievement in Basic Science under the objective –Knowledge. It can also be observed that the Animated and Static Visuals based Instructional Strategy is more effective with regard to achievement in Basic Science under the objective Knowledge, when compared to the other two Instructional Strategies used in the study.

6.2.2.2 The Analysis of Variance of the pre-test and post-test scores on Achievement in Basic Science under the objective Knowledge revealed that there was no significant difference between the means of pre-test scores of the Experimental and Control Groups. The obtained $F_x$ value is 0.036, which is not significant even at 0.05 level. But there was significant difference between the means of the post-test scores of the groups. The calculated $F_y$ value is 44.093, which is significant at 0.01 level. It shows that the Experimental and Control groups differ significantly in the post –achievement test scores under the objective-Knowledge.

6.2.2.3 The Analysis of Covariance of the pre-test and post-test scores on Achievement in Basic Science under the objective –Knowledge revealed that the difference between the means of the post-test scores of the Experimental and Control Groups are statistically significant. The obtained value of $F_{yx}$ is 59.45, and is significant at 0.01 level.
6.2.2.4 The adjusted means for post-test scores on Achievement in Basic Science under the objective Knowledge were tested for significance for df 2/155. The obtained ‘t’ values are 10.700 for EXP I and CON, 5.870 for EXP II and CON and 4.873 for EXP I and EXP II and the values are significant for all groups at 0.01 level. Since the adjusted means of both the Experimental Groups are significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior on Achievement in Basic Science at Knowledge level. The analysis also revealed that among the Experimental Groups, the adjusted means for group EXP I is significantly higher than that of group EXP II. Therefore, it can be concluded that out of the two experimental strategies under study, the Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than the Static Visuals based Instructional Strategy (EXP II) with regard to Achievement in basic Science under the objective-Knowledge.

6.2.2.5 The results obtained from the comparison of the mean gain scores on Achievement in Basic Science under the objective – Knowledge reveals that the Experimental and Control Groups shows significant difference with respect to their gain scores on Achievement in Basic Science under the objective-Knowledge. The obtained critical ratios are 9.059 for EXP I and CON, 5.830 for EXP II and CON and 3.787 for EXP I and EXP II and all are significant at 0.01 level. The mean gain scores of the Experimental Groups, particularly of EXP I is higher than that of the Control Group on Achievement
in Basic Science under the objective –Knowledge. From this it is clear that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores for the objective-Knowledge.

6.2.3 Comparison of Achievement in Basic Science under the objective-Understanding.

6.2.3.1 Comparison of the post-test scores of the Experimental and Control Groups with regard to Achievement in Basic Science under the objective –Understanding shows that the groups differ in their post-test scores. The critical ratios obtained are 11.053 for EXP I and CON, 3.414 for EXP II and CON and 6.169 for EXP I and EXP II and all are significant at 0.01 level. This reveals that there exists significant difference between the post-achievement test scores of the students of Experimental and Control Groups under the objective –Understanding. Hence it can be concluded that the Experimental Groups are more advantageous than the Control Group with respect to Achievement in Basic Science under the objective-Understanding. It can also be observed that the Animated and Static Visuals based Instructional Strategy is more effective with respect to Achievement in basic Science under the objective Understanding, when compared to the Static Visuals based Instructional Strategy and Conventional Activity Oriented Method.
6.2.3.2 The Analysis of Variance of the pre-test and post-test scores shows that there was no significant difference between the means of pre-test scores of the Experimental and Control Groups on Achievement in Basic Science under the objective-Understanding. The obtained value of $F_x$ is 0.088, which is not significant even at 0.05 level. But there was a significant difference between the means of the post-test scores of the groups. The calculated $F_y$ value is 49.539, which is significant at 0.01 level. It shows that the Experimental and Control groups differ significantly in the post achievement test scores under the objective –Understanding.

6.2.3.3 The Analysis of Covariance of the pre-test and post-test scores on achievement in Basic Science under the objective Understanding revealed that the difference between the means of the post test scores of the Experimental and Control Groups are statistically significant. The obtained value of $F_{yx}$ is 102.99, and is significant at 0.01 level.

6.2.3.4 The adjusted means for post-test scores on Achievement in Basic Science with respect to the objective –Understanding were tested for significance for df 2/155. The obtained ‘t’ values are 14.100 for EXP I and CON, 5.420 for EXP II and CON and 8.684 for EXP I and EXP II and the values are significant for all groups at 0.01 level. Since the adjusted means of both the Experimental Groups are significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior on
Achievement in Basic Science at Understanding level. The analysis also leads to the conclusion that, among the Experimental Groups, the adjusted mean for EXP I is significantly higher than that of group EXP II. Therefore it can be concluded that the Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than the Static Visuals based Instructional Strategy with regard to Achievement in basic Science under the objective- Understanding.

6.2.3.5 The results obtained from the comparison of the mean gain scores on Achievement in Basic science under the objective – Understanding reveals that the Experimental and Control Groups shows significant difference with respect to their gain scores. The obtained critical ratios are 15.429 for EXP I and CON, 4.527 for EXP II and CON and 8.533 for EXP I and EXP II and all are significant at 0.01 level. The mean gain scores of the Experimental Groups, particularly of EXP I is higher than that of the Control Group on Achievement in Basic Science under the objective-Understanding. From this it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores for the objective-Understanding.
6.2.4 Comparison of Achievement in Basic Science under the objective-Application.

6.2.4.1 Comparison of the post-test scores of students in the Experimental and Control Groups with regard to Achievement in Basic Science with respect to the objective-Application showed that the Experimental and Control Groups differs significantly. The critical ratios obtained are 11.162 for EXP I and CON, 3.310 for EXP II and CON and 7.287 for EXP I and EXP II, and all are significant at 0.01 level. This shows that there exists significant difference between the post-achievement test scores of the students of Experimental and Control Groups under the objective-Application. Hence, it can be concluded that the Experimental Groups are more advantageous than the Control Group with respect to Achievement in Basic Science under the objective-Application. It can also be observed that the Animated and Static Visuals based Instructional Strategy is more effective with respect to Achievement in Basic Science under the objective-Application, when compared to the other two Instructional Strategies used in the study.

6.2.4.2 The Analysis of Variance of the pre-test and post test scores on Achievement in Basic Science under the objective-Application revealed that there was no significant difference between the mean pre-test scores of the Experimental and Control groups. The $F_x$ value obtained is 0.141, which is not significant at 0.05 and 0.01 levels. But there exists significant difference
between the mean post-test scores of the groups under study. The obtained Fy value is 61.848, which is significant at 0.01 level and shows that the Experimental Groups and Control group differ significantly in the post-achievement test scores with regard to the objective –Application.

6.2.4.3 The Analysis of Covariance of pre-test and post –test scores on Achievement in Basic Science under the objective-Application revealed that the difference between the means of post-test scores of Experimental and Control Groups are significant at 0.01 level of significance(Fy=128.25).

6.2.4.4 Comparison of the adjusted means of the post-test scores on Achievement in Basic Science under the objective –Application showed significant difference between the groups under study at 0.01 level of significance. The obtained 't' values are 16.20 for EXP I & CON, 4.886 for EXP II & CON and 11.30 for EXP I & EXP II. The table value of 't' for df 2/155 is 2.60 at 0.01 level. So the values are significant for all groups at 0.01 level. Since the adjusted means of both the Experimental Groups are significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior on Achievement in Basic Science at Application level. This analysis also leads to the conclusion that, among the Experimental Groups, the adjusted means for group EXP I is significantly higher than that of group EXP II. Therefore it can be concluded that the Animated and Static Visuals based Instructional Strategy (EXP I)
stands on much better position than the Static Visuals based Instructional Strategy (EXP II) with respect to Achievement in Basic Science under the objective-Application.

6.2.4.5 The results obtained from the comparison of the mean gain scores on Achievement in Basic Science under the objective-Application reveals that the Experimental and Control Groups differ significantly with regard to the mean gain scores of Achievement test under the objective-Application. The obtained critical ratios are 14.453 for EXP I and CON, 4.200 for EXP II and CON and 8.775 for EXP I and EXP II, and all are significant at 0.01 level. The mean gain scores of the Experimental Groups, particularly of EXP I is higher than that of the Control Group on Achievement in Basic Science under the objective-Application. From this it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores for the objective-Application.

6.2.5 Comparison of Achievement in Basic Science under the objective-Analysis.

6.2.5.1 Comparison of the post-test scores of the Experimental and Control Groups with regard to Achievement in Basic Science under the objective-Analysis shows that the groups under study differ in their post test scores. The critical ratios obtained are 6.132 for EXP I & CON, 1.817 for EXP II &CON and 3.916 for EXP I & EXP II and the values are significant at 0.01 level.
except for between the EXP II and CON. This reveals that there exists significant difference between the post achievement test scores of the students of EXP I and Control Group under the objective - Analysis. The obtained critical ratio shows that there is no significant difference between the students of EXP II and CON Groups on Achievement in Basic Science under the objective Analysis. Hence it can be concluded that the Animated and Static Visual based Instructional Strategy is more effective with respect to Achievement in Basic Science under the objective Analysis, when compared to the Static Visuals based Instructional Strategy and the Conventional Activity Oriented Method.

6.2.5.2 The Analysis of Variance of the pre-test and post-test scores on Achievement in Basic Science under the objective- Analysis shows that there was no significant difference between the pre-test scores of the Experimental and Control Groups. The obtained Fx value is 0.000, which is not significant even at 0.05 level. But there was significant difference between the means of post-test scores of the groups. The calculated Fy value is 18.521, which is significant at 0.01 level. It shows that the Experimental and Control groups differ significantly in the post achievement test-scores under the objective-Analysis.

6.2.5.3 The Analysis of Covariance of the pre-test and post-test scores on Achievement in Basic Science with regard to the objective-Analysis revealed
that the difference between the means of the post-test scores of the Experimental and Control Groups are statistically significant. The obtained value of Fyx is 20.82, and is significant at 0.01 level.

6.2.5.4 The adjusted means for post-test scores were tested for significance for df 2/155. The obtained 't' values are 6.30 for EXP I & CON, 1.861 for EXP II & CON and 4.420 for EXP I & EXP II. The table value of 't' is 2.60 at 0.01 level and 1.97 at 0.05 level. So the obtained values are significant at 0.01 level, except for the group EXP II and CON. Since the adjusted means of students in the EXP I is significantly greater than that of students in the other groups, it can be concluded that the Experimental Group I is found superior on Achievement in Basic Science under the category of objective - Analysis.

6.2.5.5 The results obtained from the comparison of the mean gain scores on Achievement in Basic Science with respect to the objective Analysis reveals that the Experimental and Control Groups shows significant difference with respect to their gain scores on Achievement in Basic Science under the objective-Analysis. The obtained critical ratios are 6.344 for EXP I & CON, 2.005 for EXP II & CON and 3.945 ratios for EXP I & EXP II. The obtained critical ratios for EXP I & CON and for EXP I & EXP II are significant at 0.01 level and the obtained value for EXP II & CON is significant at 0.05 level. The mean gain scores of the Experimental Groups, particularly of EXP
I is higher than that of the Control Group on Achievement in Basic Science under the objective-Analysis. So it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores for the objective-Analysis.

6.2.6 Comparison of Achievement in Basic Science under the objective-Synthesis.

6.2.6.1 Comparison of the post-test scores of the Experimental and Control Groups with respect to Achievement in Basic Science under the objective-Synthesis revealed that the groups differ in their post-test scores. The critical ratios obtained are 5.806 for EXP I & CON, 2.223 for EXP II & CON and 3.261 for EXP I & EXP II. The obtained critical ratios for EXP I & CON and for EXP I & EXP II are significant at 0.01 level and the obtained value for EXP II & CON is significant at 0.05 level. This shows that there exists significant difference between the post achievement test scores of the students in the Experimental and Control Groups under the objective-Synthesis. Hence, it can be concluded that the Experimental Groups are more advantageous than the Control Group with respect to Achievement in Basic Science under the objective-Synthesis. It can also be observed that the Animated and Static Visuals based Instructional Strategy is more effective with respect to Achievement in Basic Science under the objective-Synthesis, when compared to the other two Instructional Strategies used in the study.
6.2.6.2 The Analysis of Variance of the pre-test and post –test scores shows that there was no significant difference between the means of pre-test scores of the Experimental and Control groups with respect to the objective-Synthesis. The Fx value obtained is 0.00, which is not significant at 0.05 and 0.01 levels. This indicates that there was no significant difference between pre-test scores of the groups under study. But there was significant difference between the means of the post-test scores of the groups. The obtained Fy value is 16.305, which is significant at 0.01 level. This significant Fy value shows that the Experimental Groups and Control Group differ significantly in the post-achievement test scores under the objective-Synthesis.

6.2.6.3 The Analysis of Covariance of the pre-test and post –test scores on Achievement in Basic Science under the objective-Synthesis revealed that the difference between the means of the post-test scores of the Experimental and Control groups are statistically significant. The obtained value of Fyx is 17.95, and is significant at 0.01 level.

6.2.6.4 The adjusted means for post-test scores were tested for significance for df 2/155. The obtained 't' values are 5.900 for EXP I & CON, 2.129 for EXP II & CON and 3.786 for EXP I & EXP II. The table values of 't' is 2.60 at 0.01 level and 1.97 at 0.05 level. So the obtained values are significant at 0.01 level except for the group EXP II and CON, which is significant at 0.05 level. Since the adjusted means of both the Experimental Groups are
significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior on Achievement in Basic Science at Synthesis level. The given analysis also leads to the conclusion that, among the Experimental Groups, the adjusted means for the group EXP I is significantly higher than that of group EXP II. Therefore, it can be concluded that the Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than the Static Visuals based Instructional Strategy (EXP II) with respect to Achievement in Basic Science under the objective-Synthesis.

6.2.6.5 The results obtained from the comparison of the mean gain scores on Achievement in Basic science under the objective –Synthesis reveals that the Experimental and Control Groups shows significant difference with respect to their gain scores. The critical ratios obtained are 6.036 for EXP I & CON, 2.425 for EXP II & CON and 3.309 for EXP I & EXP II. The obtained critical ratios for EXP I & CON and for EXP I & EXP II are significant at 0.01 level and the obtained value for EXP II & CON is significant at 0.05 level. The mean gain scores of the Experimental Groups, particularly of EXP I is higher than that of the Control Group on Achievement in Basic Science under the objective - Synthesis. From this it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores for the objective - Synthesis.
6.2.7 Comparison of Achievement in Basic Science under the objective – Evaluation

6.2.7.1 Comparison of the post-test scores of the Experimental and Control Groups with regard to Achievement in Basic Science under the objective - Evaluation shows that the groups differ in their post-test scores. The critical ratios obtained are 5.535 for EXP I & CON, 1.729 for EXP II & CON and 3.644 for EXP I & EXP II and the values are significant at 0.01 level, except for between EXP II & CON. This reveals that there exists significant difference between the post achievement test scores of the students of EXP I and Control Group under the objective-Evaluation. The obtained critical ratio shows that there is no significant difference between the students of EXP II and CON Group on Achievement in Basic Science under the objective-Evaluation. Hence, it can be concluded that the Animated and Static Visuals based Instructional Strategy is more effective with respect to Achievement in Basic Science under the objective Evaluation, when compared to the Static Visuals based Instructional Strategy and the Conventional Activity Oriented Method.

6.2.7.2 The Analysis of Variance of the pre-test and post-test scores on Achievement in Basic Science under the objective – Evaluation shows that there was no significant difference between the means of pre-test scores of the Experimental and Control Groups. The obtained Fx value is 0.00, which is
not significant even at 0.05 level. This shows that there was no significant
difference between the pre-test scores of Experimental Groups and Control
Group. But there exists significant difference between the means of the post-
test scores of the groups. The Fy value obtained is 16.720, which is significant
at 0.01 level. This shows that the Experimental Groups and Control Group
differ significantly in their post-achievement test scores, under the objective-
Evaluation.

6.2.7.3 The Analysis of Covariance of the pre-test and post-test scores on
Achievement in Basic Science under the objective-Evaluation revealed that
the difference between the means of post-test scores of the Experimental and
Control Groups are statistically significant. The obtained value of Fyx is
16.96, and is significant at 0.01 level.

6.2.7.4 The adjusted means for post-test scores were tested for significance
for df 2/155. The obtained 't' values are 5.60 for EXP I & CON, 1.464 for
EXP II & CON and 4.149 for EXP I & EXP II. The table value of 't' is 2.60 at
0.01 level and 1.97 at 0.05 level. So the obtained values are significant at
0.01 level, except for the group EXP II & CON. Since the adjusted means of
students in the EXP I is significantly greater than that of students in the other
groups, it can be concluded that the Experimental Group I is found superior
on Achievement in Basic Science under the category of objective-Evaluation.
The given analysis also leads to the conclusion that, among the Experimental
Groups, the adjusted means for group EXP I is significantly higher than that of Group EXP II. Therefore, we can conclude that the Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than the Static Visuals based Instructional Strategy (EXP II) with regard to Achievement in Basic Science under the objective-Evaluation.

6.2.7.5 The results obtained from the comparison of the mean gain scores on Achievement in Basic Science under the objective-Evaluation reveals that the Experimental and Control Groups shows significant difference with respect to their gain scores. The obtained critical ratios are 5.535 for EXP I & CON, 1.729 for EXP II & CON and 3.644 for EXP I & EXP II. The obtained critical ratios for EXP I & CON and for EXP I & EXP II are significant at 0.01 level and the obtained value for EXP II & CON is not significant even at 0.05 level. The mean gain scores of the Experimental Group I is higher than that of the Experimental Group II and Control Group on Achievement in Basic Science under the objective-Evaluation. So it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores for the objective-Evaluation.

6.2.8 Comparison of Attitude towards Science

6.2.8.1 Comparison of the post-test scores of students in the Experimental and Control groups with regard to their Attitude towards Science showed that
the groups differ significantly. The critical ratios obtained are 20.625 for EXP I & CON, 8.260 for EXP II & CON and 12.349 for EXP I & EXP II and all values are significant at 0.01 level. This shows that there exists significant difference between the post-test scores of students in the Experimental and Control Groups on their Attitude towards Science. Hence, it can be concluded that the Experimental Groups differ significantly from the Control Group in their Attitude towards Science, after the experimental treatments. The given analysis also leads to the conclusion that Animated and Static Visuals based Instructional Strategy (EXP I) is more effective with respect to Attitude towards Science, when compared with the other strategies used in the study.

6.2.8.2 The Analysis of Variance of the pre-test and post-test scores revealed that there was no significant difference between the mean pre-test scores of the Experimental and Control Groups with respect to Attitude towards Science. The Fx value obtained is 0.291, which is not significant at 0.01 and 0.05 levels. This indicates that there was no significant difference between pre-rest scores of the groups under study. The obtained Fy value is 216.461, which is significant at 0.01 level. This Fy value shows that the Experimental Groups and Control Group differ significantly in the post-test scores on their Attitude towards Science.
6.2.8.3 The Analysis of Covariance of pre-test and post test scores revealed that the difference between the means of post-test scores of Experimental and Control Groups are significant at 0.01 level of significance, with respect to their Attitude towards Science (Fyx=1444.49).

6.2.8.4 Comparison of the adjusted means of the post-test scores on Attitude towards science showed significant difference between the Experimental and Control Groups. The obtained 't' values are 55.3 for EXP I & CON, 21.777 for EXP II & CON and 33.543 for EXP I & EXP II. The table value of 't' at 0.01 level is 2.60. So the values are significant for all groups at 0.01 level of significance. Since the adjusted means of both the Experimental Groups are significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior on their Attitude towards Science. The given analysis also leads to the conclusion that, among the Experimental Groups, the adjusted means for the group EXP I is significantly higher than that of group EXP II. Therefore, it can be concluded that Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than the Static Visuals based Instructional Strategy (EXP II) and Conventional Activity Oriented Method, in developing Attitude towards Science.

6.2.8.5 Comparison of the gain scores on Attitude towards Science shows that the Experimental and Control Groups differ significantly with respect to
their gain scores. The critical ratios obtained are 58.156 for EXP I & CON, 33.205 for EXP II & CON and 33.214 for EXP I & EXP II. The obtained critical ratios for all groups are significant at 0.01 level of significance. The mean gain scores of the Experimental Groups, particularly of EXP I is higher than that of the Control Group on their Attitude towards Science. From this it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other Instructional Strategies used in the study, with respect to the mean gain scores of Attitude towards Science.

6.2.9 Comparison of Interest in Science

6.2.9.1 Comparison of the post-test scores of students in the Experimental and Control Groups with regard to their Interest in Science showed that the groups differ significantly. The critical ratios obtained are 17.382 for EXP I & CON, 7.760 for EXP II & CON and 8.435 for EXP I & EXP II and all values are significant at 0.01 level. This shows that there exists significant difference between the post-test scores of students in the Experimental and Control Groups in their Interest in Science. Hence, it can be concluded that the Experimental Groups differ significantly from the Control Group in their Interest in Science, after the experimental treatments. The given analysis also leads to the conclusion that the Animated and Static Visuals based Instructional Strategy (EXP I) is more effective with respect to Interest in Science.
6.2.9.2 The Analysis of Variance of the pre-test and post-test scores revealed that there was no significant difference between the mean pre-test scores of the Experimental and Control Groups with respect to Interest in Science. The Fx value obtained is 0.080, which is not significant at 0.01 and 0.05 levels. This indicates that there was no significant difference between the pre-test scores of the groups under study. The obtained Fy value 136. 309, which is significant at 0.01 level. This Fy value shows that the Experimental Groups and Control Group differ significantly in the post-test scores in their Interest in Science.

6.2.9.3 The Analysis of Covariance of pre-test and post test scores revealed that the difference between the means of post-test scores of Experimental and Control Groups are significant at 0.01 level of significance, with respect to Interest in Science (Fxy=523.49).

6.2.9.4 Comparison of the adjusted means of the post- test scores on Interest in Science showed significant difference between the Experimental and Control Groups. The obtained ‘t’ values are 33.00 for EXP I & CON, 15.57 for EXP II & CON and 17.43 for EXP I & EXP II. The table value of ‘t’ at 0.01 level is 2.60. So the values are significant for all groups at 0.01 level of significance. Since the adjusted means of both the Experimental Groups are significantly higher than that of the Control Group, the students in the Experimental Groups are found to be superior in their Interest in Science. The
given analysis also leads to the conclusion that, among the Experimental Groups, the adjusted means for the group EXP-I is significantly higher than that of Group EXP II. Therefore, it can be concluded that the Animated and Static Visuals based Instructional Strategy (EXP I) stands on much better position than Static Visuals based Instructional Strategy (EXP II) in developing Interest in Science.

6.2.9.5 Comparison of gain scores on Interest in Science shows that the Experimental and Control Groups differ significantly with respect to their gain scores. The critical ratios obtained are 32.478 for EXP I & CON, 13, 363 for EXP II & CON and 16.845 for EXP I & EXP II. The obtained critical ratios for all groups are significant at 0.01 level of significance. The mean gain scores of the Experimental Groups, particularly of EXP I is higher than that of the Control Group on their Interest in Science. From this it is evident that the Animated and Static Visuals based Instructional Strategy is superior to the other strategies under study, with respect to the mean gain scores of Interest in Science.

6.2.10 Comparison of Retention of Achievement in Basic Science

6.2.10.1 Comparison of the means of scores obtained in the Delayed Achievement test in Basic Science show that the Experimental and Control Groups differ significantly with respect to their retention of Achievement in Basic Science. The calculated critical ratios are 16.874 for EXP I & CON,
6.140 for EXP II & CON and 9.021 for EXP I & EXP II and all are significant at 0.01 level. The mean delayed post-test scores of the Experimental Groups are higher than that of the Control Group. Further the EXP I differ significantly from EXP II with respect to their Delayed post-test scores thereby indicating that the Animated and Static Visuals based Instructional Strategy is superior to the other teaching strategies selected with respect to retention of Achievement in Basic Science.

6.2.10.2 The results obtained from the comparison of the Post and Delayed Achievement test scores in Basic Science of students in the Experimental Groups shows that the critical ratios obtained are 0.585 and 1.418 for Experiment Group I and Experiment Group II respectively, which are not significant even at 0.05 level of significance. This indicates that the Achievement in Basic Science can be retained even after one month to those students who were taught using Animated and Static Visuals based Instructional Strategy and Static Visuals based Instructional Strategy. While comparing the Post and Delayed Achievement test scores in Basic Science of students in the Control Group, the critical ratio obtained is 2.998, which is significant at 0.01 level. This shows that the Achievement in Basic Science is less retained after one month to those students who were taught using Conventional Activity Oriented Method. Thus, it can be concluded that the Animated and Static Visuals based Instructional Strategy and Static Visuals based Instructional Strategy are having more advantage of helping students to
retain their Achievement for a longer period. Such an advantage is not obvious in the case of Conventional Activity Oriented Method. It is also observed that the students taught using Static Visuals based Instructional Strategy have got a higher critical ratio, when compared to students who were taught through Animated and Static Visuals based Instructional Strategy. This gives a clear indication of the effectiveness of Animated and Static Visuals based Instructional Strategy over the other two Instructional Strategies, with respect to retention of Achievement in Basic Science.

6.3 TENABILITY OF HYPOTHESES

The hypotheses formulated for the study were:

HYPOTHESIS I

The Achievement in Basic Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method

Finding numbers 6.2.1.1, 6.2.1.2, 6.2.1.3, 6.2.1.4 and 6.2.1.5 shows that the Achievement in Basic Science of students learned through Animated and Static Visuals based Instructional Strategy is significantly higher than those who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.
HYPOTHESIS II

The Achievement in Basic Science of students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Finding numbers 6.2.1.1, 6.2.1.2, 6.2.1.3, 6.2.1.4 and 6.2.1.5 shows that the Achievement in Basic Science of students learned through Static Visuals based Instructional Strategy is significantly higher than those who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.

HYPOTHESIS III

The Achievement in Basic Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

Finding numbers 6.2.1.1, 6.2.1.2, 6.2.1.3, 6.2.1.4 and 6.2.1.5 shows that the Achievement in Basic Science of students learned through Animated and Static Visuals based Instructional Strategy is significantly higher than those who learned through the Static Visuals based Instructional Strategy. Hence the above hypothesis stands substantiated.
HYPOTHESIS IV

The Achievement in Basic Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method with regard to the categories of objectives-Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

Finding numbers 6.2.2.1, 6.2.2.2, 6.2.2.3, 6.2.2.4, 6.2.2.5, 6.2.3.1, 6.2.3.2, 6.2.3.3, 6.2.3.4, 6.2.3.5, 6.2.4.1, 6.2.4.2, 6.2.4.3, 6.2.4.4, 6.2.4.5, 6.2.5.1, 6.2.5.2, 6.2.5.3, 6.2.5.4, 6.2.5.5, 6.2.6.1, 6.2.6.2, 6.2.6.3, 6.2.6.4, 6.2.6.5, 6.2.7.1, 6.2.7.2, 6.2.7.3, 6.2.7.4, and 6.2.7.5 shows that the Achievement in Basic Science of students learned through Animated and Static Visuals based Instructional Strategy under the categories of objectives namely, Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation are significantly higher than those who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.

HYPOTHESIS V

The Achievement in Basic Science of students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method with regard to the categories of objectives-Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

Finding numbers 6.2.2.1, 6.2.2.2, 6.2.2.3, 6.2.2.4, 6.2.2.5, 6.2.3.1, 6.2.3.2, 6.2.3.3, 6.2.3.4, 6.2.3.5, 6.2.4.1, 6.2.4.2, 6.2.4.3, 6.2.4.4, 6.2.4.5,
6.2.5.2, 6.2.5.3, 6.2.5.5, 6.2.6.1, 6.2.6.2, 6.2.6.3, 6.2.6.4, 6.2.6.5, 6.2.7.2, 6.2.7.3, and 6.2.7.5 shows that the Achievement in Basic Science of students learned through Static Visuals based Instructional Strategy under the categories of objectives namely, Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation are significantly higher than those who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.

**HYPOTHESIS VI**

The Achievement in Basic Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy with regard to the categories of objectives—Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation.

Finding numbers 6.2.2.1, 6.2.2.2, 6.2.2.3, 6.2.2.4, 6.2.2.5, 6.2.3.1, 6.2.3.2, 6.2.3.3, 6.2.3.4, 6.2.3.5, 6.2.4.1, 6.2.4.2, 6.2.4.3, 6.2.4.4, 6.2.4.5, 6.2.5.1, 6.2.5.2, 6.2.5.3, 6.2.5.4, 6.2.5.5, 6.2.6.1, 6.2.6.2, 6.2.6.3, 6.2.6.4, 6.2.6.5, 6.2.7.1, 6.2.7.2, 6.2.7.3, 6.2.7.4, and 6.2.7.5 shows that the Achievement in Basic Science of students learned through Animated and Static Visuals based Instructional Strategy under the categories of objectives namely, Knowledge, Understanding, Application, Analysis, Synthesis, and Evaluation are significantly higher than those who learned through the Static
Visuals based Instructional Strategy. Hence the above hypothesis stands substantiated.

**HYPOTHESIS VII**

The Attitude towards Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Finding numbers 6.2.8.1, 6.2.8.2, 6.2.8.3, 6.2.8.4, and 6.2.8.5 shows that the students learned through Animated and Static Visuals based Instructional Strategy have more Attitude towards Science than the students who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.

**HYPOTHESIS VIII**

The Attitude towards Science of students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Finding numbers 6.2.8.1, 6.2.8.2, 6.2.8.3, 6.2.8.4, and 6.2.8.5 shows that the students learned through Static Visuals based Instructional Strategy have more Attitude towards Science than the students who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.
HYPOTHESIS IX

The Attitude towards Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

Finding numbers 6.2.8.1, 6.2.8.2, 6.2.8.3, 6.2.8.4, and 6.2.8.5 shows that the students learned through Animated and Static Visuals based Instructional Strategy have more Attitude towards Science than the students who learned through the Static Visuals based Instructional Strategy. Hence the above hypothesis stands substantiated.

HYPOTHESIS X

The Interest in Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Finding numbers 6.2.9.1, 6.2.9.2, 6.2.9.3, 6.2.9.4, and 6.2.9.5 shows that the students learned through Animated and Static Visuals based Instructional Strategy have more Interest towards Science than the students who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.
HYPOTHESIS XI

The Interest in Science of Students at Upper Primary level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Finding numbers 6.2.9.1, 6.2.9.2, 6.2.9.3, 6.2.9.4, and 6.2.9.5 shows that the students learned through Static Visuals based Instructional Strategy have more Interest towards Science than the students who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.

HYPOTHESIS XII

The Interest in Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

Finding numbers 6.2.9.1, 6.2.9.2, 6.2.9.3, 6.2.9.4, and 6.2.9.5 shows that the students learned through Animated and Static Visuals based Instructional Strategy have more Interest towards Science than the students who learned through the Static Visuals based Instructional Strategy. Hence the above hypothesis stands substantiated.
HYPOTHESIS XIII

The retention of Achievement in Basic Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Findings numbers 6.2.10.1 and 6.2.10.2 shows that the retention of Achievement in Basic Science of students learned through Animated and Static Visuals based Instructional Strategy is significantly higher than those who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.

HYPOTHESIS XIV

The retention of Achievement in Basic Science of students at Upper Primary Level taught using Static Visuals based Instructional Strategy is significantly higher than that of students taught using Conventional Activity Oriented Method.

Findings numbers 6.2.10.1 and 6.2.10.2 shows that the retention of Achievement in Basic Science of students learned through Static Visuals based Instructional Strategy is significantly higher than those who learned through the Conventional Activity Oriented Method. Hence the above hypothesis stands substantiated.
HYPOTHESIS XV

The retention of Achievement in Basic Science of students at Upper Primary Level taught using Animated and Static Visuals based Instructional Strategy is significantly higher than that of students taught using Static Visuals based Instructional Strategy.

Finding number 6.2.10.1 shows that the retention of Achievement in Basic Science of students learned through Animated and Static Visuals based Instructional Strategy is significantly higher than those who learned through the Static Visuals based Instructional Strategy. Hence the above hypothesis stands substantiated.

6.4 CONCLUSIONS BASED ON THE STUDY

Findings from the study with respect to the total Achievement in Basic Science reveals that the students who learned through Animated and Static Visuals based Instructional Strategy have better achievement than those who learned through the Static Visuals based Instructional Strategy and the Conventional Activity Oriented method. Hence, it can be concluded that Animated and Static Visuals based Instructional Strategy is more effective when compared to the Static Visuals based Instructional Strategy and Conventional Activity Oriented Method with regard to total achievement in Basic Science of students at Upper Primary Level. Findings also revealed that the students who learned through Static Visuals based Instructional Strategy
have more Achievement in Basic Science than those who learned through Conventional Activity Oriented Method.

The findings of the study reveals that the students who learned through the Animated and Static Visuals based Instructional Strategy exhibited higher Achievement in Basic Science under the categories of objectives- Knowledge, Understanding, Application, Analysis, Synthesis and Evaluation. Achievement in Basic Science of students in the Experimental and Control Groups shows that the Achievement in Basic Science of students who learned through the Animated and Static Visuals based Instructional Strategy is significantly higher than that of students who learned through the Static Visuals based Instructional Strategy and the Conventional Activity Oriented Method. Thus the Animated and Static Visuals based Instructional Strategy is more effective when compared to the Static Visuals based Instructional Strategy and the Conventional Activity Oriented Method with regard to objective-wise achievement in Basic Science of students at Upper Primary Level. From the findings it is also evident that the students who learned through Static Visuals based Instructional Strategy showed more Achievement in Basic Science with regard to the objectives-Knowledge, Understanding, Application, and Synthesis when compared to those who learned through Conventional Activity Oriented Method.
The results obtained from the analysis of data with respect to the Attitude towards Science shows that the students who learned through the Animated and Static Visuals Based Instructional Strategy have better Attitude towards Science than those students who learned through the Static Visuals based Instructional Strategy and the Conventional Activity Oriented Method. Thus, it can be concluded that the Animated and Static Visuals based Instructional Strategy is more effective in developing Attitude towards Science at Upper Primary Level. Findings also revealed that the Static Visuals based Instructional Strategy is more effective in developing Attitude towards Science at Upper Primary Level, when compared to Conventional Activity Oriented Method.

The analysis of data with respect to the Interest in Science indicate that the students who learned through Animated and Static Visuals based Instructional Strategy have more Interest in science than those who learned through the Static Visuals Based Instructional strategy and the Conventional Activity Oriented Method. Thus, it can be concluded that the Animated and Static Visuals based Instructional Strategy is more effective in increasing the Interest in Science of students at Upper Primary Level. The results obtained from the analysis of data with respect to Interest in Science also shows that the students who learned through the Static Visuals based Instructional Strategy have exhibited more Interest in Science than those who learned through Conventional Activity Oriented Method.
Findings from the study with respect to retention of Achievement in Basic Science reveals that the students who learned through Animated and Static Visuals based Instructional Strategy have exhibited better retention of Achievement in Basic Science than those who learned through the Static Visuals Based Instructional strategy and the Conventional Activity Oriented method. Thus, the Animated and Static Visuals based Instructional Strategy is more effective on the retention of Achievement in Basic Science of students at Upper Primary Level. Findings also revealed that the students who learned through Static Visuals based Instructional Strategy have exhibited more retention in Basic Science than those who learned through Conventional Activity Oriented Method.

6.5 EDUCATIONAL IMPLICATIONS OF THE STUDY

Today we find computer graphics used routinely in such diverse areas as science, engineering, medicine, businesses, industry, government, art, entertainment, advertising, education and training. Hence, the Animated and Static Visuals based Instructional Strategy has implications for the educational practitioners, educational planners, teacher educators, curriculum designers and Science teachers. The major findings of the study holds that under appropriate conditions, majority of the population can be brought to a higher level of Achievement in Basic Science, Attitude towards Science, Interest in Science and retention of Achievement in Basic science by adopting
Findings, Conclusions And Suggestions

the Animated and Static Visuals based Instructional Strategy for teaching Basic Science at Upper Primary Level.

The students taught through Animated and Static Visuals based Instructional Strategy exhibited more interest in Science. Hence, animation programmes based on all the units in Basic Science shall be prepared and made available to the teachers. Pre-service and in-service training on Animated and Static Visuals based Instructional Strategy shall be arranged for teachers and they may be encouraged to use this strategy more frequently in Basic Science classrooms.

Teachers should try to integrate Animated and Static Visuals Based Instructional Strategy with different creative areas of pupils. Students may like to illustrate stories, poems or articles that they have written or read. Motivate the students to write working scripts, develop story boards and prepare simple animations using the school resources.

Organize supplementary activities like workshops for script writing, story board preparation and techniques of animation on Science topics such as pollution, deforestation, problems in biodiversity management, modern agricultural practices, properties of matter, forms of energy, atmospheric pressure, law of gravity, evaporation, atomic structure etc.. Teachers should encourage students to focus on the causes, effects and remedies of these issues. It should enhance the scientific consciousness of the students.
6.5.1 Suggestions of the study

Based on the findings of the study, the following suggestions are made:

1. The present study revealed that the use of Animated and Static Visuals Based Instructional Strategy is more effective when compared to the Static Visual based Instructional Strategy and Conventional Activity Oriented Method for the Achievement in Basic Science, Attitude towards Science, Interest in Science and retention of Achievement in Basic Science of Students at Upper Primary Level. Hence the use of this Strategy by teachers should be encouraged while teaching Basic Science at Upper Primary Level for better Achievement in Basic Science, to develop proper Attitude towards Science, to increase the Interest of Students in Science and for increased retention of Achievement in Basic Science.

2. The teachers may experience difficulties in the preparation of lesson transcripts based on Animated and Static Visuals based Instructional Strategy, writing of Scripts for animation programme and preparation of story boards. So teachers should be given in-service training for writing scripts, preparing story boards and making animation programmes. Lesson transcripts based on Animated and Static Visuals based Instructional Strategy on selected units of all subjects may be
developed by an expert team under the guidance of SCERT and should be made available to teachers for ready reference.

3. In order to implement the Animated and Static Visuals based Instructional Strategy effectively, the teachers need theoretical orientation, ICT based Training and practical guidance. For this, Orientation classes, Refresher Courses, Workshops and Seminars should be organized and the teachers should be familiarized with modern Instructional Strategies.

4. Since the Animated and Static Visuals based Instructional Strategy is found to be more effective than the Static Visuals based Instructional Strategy and Conventional Activity Oriented Method for improving Achievement in Basic Science, Attitude towards Science, Interest in Science, and retention of Achievement in Basic Science, provisions for training in making animation, script writing and preparation of storyboard should be made in the teacher education curriculum.

5. Some measures may be taken in the government level to develop positive attitude among teachers for adopting effective and interesting Instructional Strategies in Schools. The incorporation of Animated and Static Visuals based Instructional Strategy is a better option to make Science learning live and interesting at Upper Primary level.
6. The preparation of Animation programme is very much expensive and time consuming and also it is a work of expertise. Hence it is essential that the authorities should organize State Level expert groups and give financial aid to outstanding projects and the prepared programme should be circulated among teachers throughout the State.

7. Teachers should be made thorough with the theory and practice related to Information and Communication Technology and modern developments in this area. In order to acquaint them with the new developments in computer graphics, in service training should be organized periodically in order to promote the use of Animation based Instructional Strategies.

8. Since the required facilities are not available in majority of Upper Primary Schools for practicing Animation based Instructional Strategies, the schools should be provided with well equipped computer laboratory, suitable libraries and reference facilities.

9. Due to the overcrowded class rooms the teachers may encounter some difficulties while adopting the Animated and Static Visuals based Instructional Strategy. The authorities should take necessary steps to revise the teacher-pupil ratio by reducing the number of students in the class.
10. Most of the Schools do not have required number of projectors, projection screens and facility for continuous supply of electricity. For implementing the Animated and Static Visuals based Instructional Strategy the authorities should provide enough facilities in all the Upper Primary Schools in the State.

6.6 SUGGESTIONS FOR FURTHER RESEARCH

The investigator wishes to suggest the following areas for further research;

1. The study was conducted on a representative sample of Upper Primary students selected from a single school of Malappuram District. The study can be repeated on a large sample representing all districts in the state and for different subjects to ensure the reliability of result.

2. The study was focused on evaluating the effectiveness of Animated and Static Visuals based Instructional Strategy on Achievement in Basic Science, Attitude towards Science, Interest in Science and retention of Achievement in Basic Science. This study can be extended to find out the effect of this strategy on solving scientific problems, developing environmental awareness, and inculcating scientific skills.

3. The study was conducted with respect to Achievement in Basic Science of students at Upper Primary level. Related studies can be conducted to find out the effect of Animated and Static Visuals based
Instructional Strategy on Achievement of learners of different age groups, grade levels, subject areas, intelligence level and socio-economic status groups.

4. Studies can be conducted to find out the effectiveness of Animated and Static Visuals based Instructional Strategy among slow learners, gifted children, under achievers and learners with learning disability.

5. A survey study can be undertaken to find out the facilities available in the Upper Primary Schools of Kerala for practicing Animated and Static Visuals based Instructional Strategy.

6. A study can be conducted to find out whether the content areas in different subjects of the Primary School curriculum is suitable to transact by adopting Animated and Static Visuals based Instructional Strategy.

7. The attitude of students, teachers and parents towards Animated and Static Visuals based Instructional Strategy can be explored.

8. Similar studies can be conducted to find out the effect of motion pictures, comic cartoons, television programmes etc. in learning Science among exceptional learners.

9. A study can be undertaken to find out the effectiveness of Animated and Static Visuals based Instructional Strategy in developing laboratory skills among Secondary School students.