CHAPTER – VI

SUMMARY AND CONCLUSION

The data collected in the present investigation have been analysed and findings presented in the preceding chapters. This chapter presents a brief summary of the investigation, the findings, discussion of the findings, conclusions that have been drawn from the findings, implications for education and suggestions for further research in the fields.

6.1 Re-Statement of the Problem

The purpose of the study was to investigate “An Interaction Effect of Students School Adjustment, Attitude and Socio-economic status on Academic Achievement in Science Among Secondary School Students”.

6.2 General Objectives of the Study

The present study was designed with the following general objectives in view:

1. To study the effect of students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

2. To study the effect of Boys School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

3. To study the effect of Girls School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.
4. To study the effect of Urban Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

5. To study the effect of Rural Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

6. To study the effect of Government School Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

7. To study the effect of Private School Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

6.3 Specific Objectives

The present study was designed with the following specific objectives in view:

i. Entire Sample

1. To study the effect of students School adjustment on Academic achievement in science.

2. To study the effect of students Attitude towards science on Academic achievement in science.

3. To study the effect of students Socio-economic status on Academic achievement in science.

4. To study the interaction effect of students School adjustment and Attitude towards science on Academic achievement in science.

5. To study the interaction effect of students School adjustment and Socio-economic status on Academic achievement in science.
6. To study the interaction effect of students Attitude towards science and Socio-economic status on Academic achievement in science.

7. To study the interaction effect of students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

**ii. Boys**

8. To study the effect of Boys School adjustment on Academic achievement in science.

9. To study the effect of Boys Attitude towards science on Academic achievement in science.

10. To study the effect of Boys Socio-economic status on Academic achievement in science.

11. To study the interaction effect of Boys School adjustment and Attitude towards science on Academic achievement in science.

12. To study the interaction effect of Boys School adjustment and Socio-economic status on Academic achievement in science.

13. To study the interaction effect of Boys Attitude towards science and Socio-economic status on Academic achievement in science.

14. To study the interaction effect of Boys School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

**iii. Girls**

15. To study the effect of Girls School adjustment on Academic achievement in science.

16. To study the effect of Girls Attitude towards science on Academic achievement in science.
17. To study the effect of Girls Socio-economic status on Academic achievement in science.

18. To study the interaction effect of Girls School adjustment and Attitude towards science on Academic achievement in science.

19. To study the interaction effect of Girls School adjustment and Socio-economic status on Academic achievement in science.

20. To study the interaction effect of Girls Attitude towards science and Socio-economic status on Academic achievement in science.

21. To study the interaction effect of Girls School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

iv. Urban Students

22. To study the effect of Urban Students School adjustment on Academic achievement in science.

23. To study the effect of Urban Students Attitude towards science on Academic achievement in science.

24. To study the effect of Urban Students Socio-economic status on Academic achievement in science.

25. To study the interaction effect of Urban Students School adjustment and Attitude towards science on Academic achievement in science.

26. To study the interaction effect of Urban Students School adjustment and Socio-economic status on Academic achievement in science.

27. To study the interaction effect of Urban Students Attitude towards science and Socio-economic status on Academic achievement in science.
28. To study the interaction effect of Urban Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

v. Rural Students

29. To study the effect of Rural Students School adjustment on Academic achievement in science.

30. To study the effect of Rural Students Attitude towards science on Academic achievement in science.

31. To study the effect of Rural Students Socio-economic status on Academic achievement in science.

32. To study the interaction effect of Rural Students School adjustment and Attitude towards science on Academic achievement in science.

33. To study the interaction effect of Rural Students School adjustment and Socio-economic status on Academic achievement in science.

34. To study the interaction effect of Rural Students Attitude towards science and Socio-economic status on Academic achievement in science.

35. To study the interaction effect of Rural Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

vi. Government School Students

36. To study the effect of Government School Students School adjustment on Academic achievement in science.

37. To study the effect of Government School Students Attitude towards science on Academic achievement in science.

38. To study the effect of Government School Students Socio-economic status on Academic achievement in science.
39. To study the interaction effect of Government School Students School adjustment and Attitude towards science on Academic achievement in science.

40. To study the interaction effect of Government School Students School adjustment and Socio-economic status on Academic achievement in science.

41. To study the interaction effect of Government School Students Attitude towards science and Socio-economic status on Academic achievement in science.

42. To study the interaction effect of Government School Students School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

vii. Private School Students

43. To study the effect of Private School Students School adjustment on Academic achievement in science.

44. To study the effect of Private School Students Attitude towards science on Academic achievement in science.

45. To study the effect of Private School Students Socio-economic status on Academic achievement in science.

46. To study the interaction effect of Private School Students School adjustment and Attitude towards science on Academic achievement in science.

47. To study the interaction effect of Private School Students School adjustment and Socio-economic status on Academic achievement in science.

48. To study the interaction effect of Private School Students Attitude towards science and Socio-economic status on Academic achievement in science.
49. To study the interaction effect of Private School Students' School adjustment, Attitude towards science and Socio-economic status on Academic achievement in science.

6.4 Research Hypotheses

Keeping in view the above specific objectives, the following research hypotheses were framed:

i. Entire Sample

1. Effects of high and low School adjustment of students differ significantly in terms of their influence on Academic achievement in science.
2. Effects of favorable and unfavorable Attitude towards science of students differ significantly in terms of their influence on Academic achievement in science.
3. Effects of high and low Socio-economic status of students differ significantly in terms of their influence on Academic achievement in science.
4. Interaction effects of students' School adjustment X Attitude towards science differ significantly in terms of their influence on Academic achievement in science.
5. Interaction effects of students' School adjustment X Socio-economic status differ significantly in terms of their influence on Academic achievement in science.
6. Interaction effects of students' Attitude towards science X Socio-economic status differ significantly in terms of their influence on Academic achievement in science.
7. Interaction effects of students' School adjustment X Attitude towards science X Socio-economic status differ significantly in terms of their influence on Academic achievement in science.
**ii. Boys**

8. Effects of high and low School adjustment of Boys differ significantly in terms of their influence on Academic achievement in science.

9. Effects of favorable and unfavorable Attitude towards science of Boys differ significantly in terms of their influence on Academic achievement in science.

10. Effects of high and low Socio-economic status of Boys differ significantly in terms of their influence on Academic achievement in science.

11. Interaction effects of School adjustment X Attitude towards science of Boys differ significantly in terms of their influence on Academic achievement in science.

12. Interaction effects of School adjustment X Socio-economic status of Boys differ significantly in terms of their influence on Academic achievement in science.

13. Interaction effects of Attitude towards science X Socio-economic status of Boys differ significantly in terms of their influence on Academic achievement in science.

14. Interaction effects of School adjustment X Attitude towards science X Socio-economic status of Boys differ significantly in terms of their influence on Academic achievement in science.

**iii. Girls**

15. Effects of high and low School adjustment of Girls differ significantly in terms of their influence on Academic achievement in science.

16. Effects of favourable and unfavourable Attitude towards science of Girls differ significantly in terms of their influence on Academic achievement in science.
17. Effects of high and low Socio-economic status of Girls differ significantly in terms of their influence on Academic achievement in science.

18. Interaction effects of School adjustment X Attitude towards science of Girls differ significantly in terms of their influence on Academic achievement in science.

19. Interaction effects of School adjustment X Socio-economic status of Girls differ significantly in terms of their influence on Academic achievement in science.

20. Interaction effects of Attitude towards science X Socio-economic status of Girls differ significantly in terms of their influence on Academic achievement in science.

21. Interaction effects of School adjustment X Attitude towards science X Socio-economic status of Girls differ significantly in terms of their influence on Academic achievement in science.

iv. Urban Students

22. Effects of high and low School adjustment of Urban Students differ significantly in terms of their influence on Academic achievement in science.

23. Effects of favourable and unfavourable Attitude towards science of Urban Students differ significantly in terms of their influence on Academic achievement in science.

24. Effects of high and low Socio-economic status of Urban Students differ significantly in terms of their influence on Academic achievement in science.

25. Interaction effects of School adjustment X Attitude towards science of Urban Students differ significantly in terms of their influence on Academic achievement in science.
26. Interaction effects of School adjustment X Socio-economic status of Urban Students differ significantly in terms of their influence on Academic achievement in science.

27. Interaction effects of Attitude towards science X Socio-economic status of Urban Students differ significantly in terms of their influence on Academic achievement in science.

28. Interaction effects of School adjustment X Attitude towards science X Socio-economic status of Urban Students differ significantly in terms of their influence on Academic achievement in science.

v. Rural Students

29. Effects of high and low School adjustment of Rural Students differ significantly in terms of their influence on Academic achievement in science.

30. Effects of favorable and unfavorable Attitude towards science of Rural Students differ significantly in terms of their influence on Academic achievement in science.

31. Effects of high and low Socio-economic status of Rural Students differ significantly in terms of their influence on Academic achievement in science.

32. Interaction effects of School adjustment X Attitude towards science of Rural Students differ significantly in terms of their influence on Academic achievement in science.

33. Interaction effects of School adjustment X Socio-economic status of Rural Students differ significantly in terms of their influence on Academic achievement in science.
34. Interaction effects of Attitude towards science X Socio-economic status of Rural Students differ significantly in terms of their influence on Academic achievement in science.

35. Interaction effects of School adjustment X Attitude towards science X Socio-economic status of Rural Students differ significantly in terms of their influence on Academic achievement in science.

vi. Government School Students

36. Effects of high and low School adjustment of Government School Students differ significantly in terms of their influence on Academic achievement in science.

37. Effects of favorable and unfavorable Attitude towards science of Government School Students differ significantly in terms of their influence on Academic achievement in science.

38. Effects of high and low Socio-economic status of Government School Students differ significantly in terms of their influence on Academic achievement in science.

39. Interaction effects of School adjustment X Attitude towards science of Government School Students differ significantly in terms of their influence on Academic achievement in science.

40. Interaction effects of School adjustment X Socio-economic status of Government School Students differ significantly in terms of their influence on Academic achievement in science.

41. Interaction effects of Attitude towards science X Socio-economic status of Government School Students differ significantly in terms of their influence on Academic achievement in science.
42. Interaction effects of School adjustment X Attitude towards science X Socio-economic status of Government School Students differ significantly in terms of their influence on Academic achievement in science.

vii. Private School Students

43. Effects of high and low School adjustment of Private School Students differ significantly in terms of their influence on Academic achievement in science.

44. Effects of favorable and unfavorable Attitude towards science of Private School Students differ significantly in terms of their influence on Academic achievement in science.

45. Effects of high and low Socio-economic status of Private School Students differ significantly in terms of their influence on Academic achievement in science.

46. Interaction effects of School adjustment X Attitude towards science of Private School Students differ significantly in terms of their influence on Academic achievement in science.

47. Interaction effects of School adjustment X Socio-economic status of Private School Students differ significantly in terms of their influence on Academic achievement in science.

48. Interaction effects of Attitude towards science X Socio-economic status of Private School Students differ significantly in terms of their influence on Academic achievement in science.

49. Interaction effects of School adjustment X Attitude towards science X Socio-economic status of Private School Students differ significantly in terms of their influence on Academic achievement in science.
6.5 Variables Considered in the Study

6.5.1 Independent Variables

The independent variables considered in the present study were as follows:

i. School Adjustment (High - Low)
ii. Attitude towards Science (Favourable - Unfavourable)
iii. Socio-Economic Status (High - Low)

6.5.2 Dependent Variable

Academic Achievement of Students in Science

6.5.3 Moderator Variables

i. Sex (Boys and Girls)
ii. Locality (Urban and Rural)
iii. Type of Management (Government and Private)

6.6 Methodology

6.6.1 Method of Research

Ex Post Facto research design was used in the present study (Kerlinger, 1964, p. 379). Ex Post Facto research is a systematic empirical inquiry in which the investigator does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable. Inferences about relations among variables are made, without direct intervention, from concomitant variation of independent and dependent variables.
6.6.2 Data Gathering Tools

Review of related testing materials revealed that (i) Suitable tools for the assessment of students school adjustment, attitude and socio-economic status are readily available. Hence, it was decided to use Adjustment Inventory for School Students developed by Sinha and Singh(2007); Science Attitude Scale developed by Avinash Grewal(1990); and Socio-Economic Status Scale developed by Meenakshi(2004). (ii) A test for the assessment of Academic Achievement of students in science based on Karnataka State syllabus of IX Standard is conspicuous by its absence. Hence, it was decided to construct a suitable test for the assessment of academic achievement of students in science.

6.6.3 The Sample

One of the important step in any research is to draw a sample which would truly represents the characteristics of the population in which the inferences are intended to be made. In this sense a sample is the population in a miniature form. Generally, the sample for a research is drawn by using either random sampling technique, stratified random sampling techniques and so on depending upon the purpose of the study.

The population for the present study was all those students who were studying Science subject at the secondary schools in Chikodi Educational District. Sampling was done in order to get school representation, and the student representation. 50 secondary schools
were taken using random sampling technique and 500 students studying in IX Standard were drawn among the Government and Private Secondary Schools in Urban and Rural area of Chikkodi Educational District forms the sample.

6.6.4 Collection of Data

In order to collect the necessary data pertaining to the Adjustment Inventory for School Students developed by Sinha and Singh (2007), Science Attitude Scale developed by Avinash Grewal (1990) and Socio-Economic Status Scale developed by Meenakshi (2004), were administered among boys and girls of IX Standard students selected at random. The tools were administered to 500 students of Secondary Schools of Chikkodi Educational District. Personal data relating to sex, locality, types of management, class and subject etc, were also collected through a personal data proforma.

Students were made to sit and feel quite comfortable without any embarrassment and were encouraged to answer freely. The directions were clearly given to the students before distributing the tools. The investigator administered a tool that is, Adjustment Inventory for School Students for IX standard students. They have to respond on 2 point scale i.e., 'YES' or 'NO'.

Similarly the Science Attitude Scale was administered to the same group of students. They have to respond on five point scale i.e., 'SA', 'A', 'U', 'D', 'SD'. The Socio-economic status of the students was indicated by
the Socio-economic status of the head of the family which will be determined by the total scores of education, profession, monthly income, total wealth in cash or debts property surrounding or locality and social status by administering the Socio-economic status scale to the same group of students. The subjects respond to each part item by putting a tick mark (✓) against the statements which fit them and a cross mark (✗) which do not fit them.

Further, in order to collect data pertaining to achievement in science, an Academic achievement test constructed and validated by the investigator was administered to the same group of students who have responded for Adjustment inventory for school students, Science attitude scale and Socio-economic status scale.

6.6.5 Statistical Techniques Used

The purpose of the study was to investigate the main effects and interaction effects of three independent variables namely, School adjustment, Attitude towards science and Socio-economic status on the dependent variable, that is, academic achievement of students in science. As there were three independent variables, it was decided to use 3-way Analysis of Variance (ANOVA) in order to find out the main and interaction effects.

Secondly, if the treatment groups differ significantly, it will not be clear from the findings that, which of the comparisons of the treatment groups differ significantly in terms of their effect on academic
achievement variable. Hence, to know this, multiple comparison of means of all the treatment groups was carried out using Scheffe’s test (1959).

These statistical techniques were also used in order to study the interaction effects in case of sub-samples like, boys, girls, urban students, rural students, government school students and private school students. The analysis of data was carried out in pursuance of the objectives of the study as well as the research hypotheses.

6.7 Major Findings

i. Entire Sample

1) The students with high School adjustment have more influence on academic achievement of students in science than the students with low School adjustment.

2) The students with favourable Attitude towards science have more influence on academic achievement of students in science than the students with unfavourable Attitude towards science.

3) The students with low Socio-economic status have more influence on academic achievement of students in science than the students with high Socio-economic status.

4) The students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of
students in science than the students with high School adjustment and unfavourable Attitude towards science.

5) The students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the students with low School adjustment and favourable Attitude towards science.

6) The students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the students with low School adjustment and unfavourable Attitude towards science.

7) The students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the students with low School adjustment and favourable Attitude towards science.

8) The students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the students with low School adjustment and unfavourable Attitude towards science.

9) The students with low School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the students with low School adjustment and unfavourable Attitude towards science.
10) The students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment and high Socio-economic status.

11) The students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment and low Socio-economic status.

12) The students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment and high Socio-economic status.

13) The students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment and low Socio-economic status.

14) The students with low School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment and low Socio-economic status.

15) The students with favourable Attitude towards science and high Socio-economic status have more influence on academic
achievement of students in science than the students with favourable Attitude towards science and low Socio-economic status.

16) The students with favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with unfavourable Attitude towards science and low Socio-economic status.

17) The students with unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with unfavourable Attitude towards science and low Socio-economic status.

18) The students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, favourable Attitude towards science and high Socio-economic status.

19) The students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the
students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

20) The students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

21) The students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

22) The students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status.

23) The students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, favourable Attitude towards science and high Socio-economic status.
24) The students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

25) The students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

26) The students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

27) The students with high School adjustment, unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

28) The students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more
influence on academic achievement of students in science than the students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

29) The students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

30) The students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

31) The students with low School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

32) The students with low School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the
students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

33) The students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

**ii. Boys**

34) The Boys with high School adjustment have more influence on academic achievement of students in science than the Boys with low School adjustment.

35) The Boys with favourable Attitude towards science have more influence on academic achievement of students in science than the Boys with unfavourable Attitude towards Science.

36) The Boys with low Socio-economic status have more influence on academic achievement of students in science than the Boys with high Socio-economic status.

37) The Boys with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Boys with high School adjustment and unfavourable Attitude towards science.
38) The Boys with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Boys with low School adjustment and favourable Attitude towards science.

39) The Boys with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Boys with low School adjustment and unfavourable Attitude towards science.

40) The Boys with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Boys with low School adjustment and favourable Attitude towards science.

41) The Boys with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Boys with low School adjustment and unfavourable Attitude towards science.

42) The Boys with low School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Boys with low School adjustment and unfavourable Attitude towards science.

43) The Boys with high School adjustment and high Socio-economic status have more influence on academic achievement of students
in science than the Boys with low School adjustment and high Socio-economic status.

44) The Boys with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment and low Socio-economic status.

45) The Boys with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment and high Socio-economic status.

46) The Boys with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment and low Socio-economic status.

47) The Boys with high school adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

48) The Boys with high school adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with
high School adjustment, unfavourable Attitude towards science and low Socio-economic status.

49) The Boys with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, favourable Attitude towards science and high Socio-economic status.

50) The Boys with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, favourable Attitude towards science and low Socio-economic status.

51) The Boys with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

52) The Boys with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

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53) The Boys with high School adjustment, unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

54) The Boys with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

55) The Boys with low School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Boys with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

**iii. Girls**

56) The Girls with high School adjustment have more influence on academic achievement of students in science than the Girls with low School adjustment.

57) The Girls with favourable Attitude towards science have more influence on academic achievement of students in science than the Girls with unfavourable Attitude towards Science.
58) The Girls with high Socio-economic status have more influence on academic achievement of students in science than the Girls with low Socio-economic status.

59) The Girls with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Girls with high School adjustment and unfavourable Attitude towards science.

60) The Girls with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Girls with low School adjustment and favourable Attitude towards science.

61) The Girls with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Girls with low School adjustment and unfavourable Attitude towards science.

62) The Girls with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Girls with low School adjustment and favourable Attitude towards science.

63) The Girls with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of
students in science than the Girls with low School adjustment and unfavourable Attitude towards science.

64) The Girls with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

65) The Girls with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

66) The Girls with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

67) The Girls with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, favourable Attitude towards science and low Socio-economic status.
68) The Girls with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

69) The Girls with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

70) The Girls with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, favourable Attitude towards science and low Socio-economic status.

71) The Girls with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Girls with low School adjustment, favourable Attitude towards science and high Socio-economic status.
iv. **Urban Students**

72) The Urban Students with high School adjustment have more influence on academic achievement of students in science than the Urban Students with low School adjustment.

73) The Urban Students with favourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with unfavourable Attitude towards Science.

74) The Urban Students with low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with high Socio-economic status.

75) The Urban Students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with high School adjustment and unfavourable Attitude towards science.

76) The Urban Students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with low School adjustment and favourable Attitude towards science.
77) The Urban Students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with low School adjustment and unfavourable Attitude towards science.

78) The Urban Students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with low School adjustment and favourable Attitude towards science.

79) The Urban Students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with low School adjustment and unfavourable Attitude towards science.

80) The Urban Students with low School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Urban Students with low School adjustment and unfavourable Attitude towards science.

81) The Urban Students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment and high Socio-economic status.
The Urban Students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment and low Socio-economic status.

The Urban Students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment and high Socio-economic status.

The Urban Students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment and low Socio-economic status.

The Urban Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, favourable Attitude towards science and high Socio-economic status.

The Urban Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.
87) The Urban Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

88) The Urban Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

89) The Urban Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, favourable Attitude towards science and high Socio-economic status.

90) The Urban Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.
91) The Urban Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

92) The Urban Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

93) The Urban Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

94) The Urban Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Urban Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

95) The Urban Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more
influence on academic achievement of students in science than the Urban Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

v. Rural Students

96) The Rural Students with high School adjustment have more influence on academic achievement of students in science than the Rural Students with low School adjustment.

97) The Rural Students with favourable Attitude towards science have more influence on academic achievement of students in science than the Rural Students with unfavourable Attitude towards Science.

98) The Rural Students with high Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low Socio-economic status.

99) The Rural Students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment and low Socio-economic status.

100) The Rural Students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment and high Socio-economic status.
101) The Rural Students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment and low Socio-economic status.

102) The Rural Students with low School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment and low Socio-economic status.

103) The Rural Students with favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Rural Students with unfavourable Attitude towards science and low Socio-economic status.

104) The Rural Students with unfavourable Attitude towards science and high Socio-economic have more influence on academic achievement of students in science than the Rural Students with unfavourable Attitude towards science and low Socio-economic status.

105) The Rural Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science
than the Rural Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

106) The Rural Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

107) The Rural Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

108) The Rural Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

109) The Rural Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.
110) The Rural Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

111) The Rural Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Rural Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

vi. Government School Students

112) The Government School Students with high School adjustment have more influence on academic achievement of students in science than the Government School Students with low School adjustment.

113) The Government School Students with favourable Attitude towards science have more influence on academic achievement of students in science than the Government School Students with unfavourable Attitude towards Science.

114) The Government School Students with high Socio-economic status have more influence on academic achievement of students in
science than the Government School Students with low Socio-economic status.

115) The Government School Students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Government School Students with high School adjustment and unfavourable Attitude towards science.

116) The Government School Students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Government School Students with low School adjustment and favourable Attitude towards science.

117) The Government School Students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Government School Students with low School adjustment and unfavourable Attitude towards science.

118) The Government School Students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Government School Students with low School adjustment and unfavourable Attitude towards science.
119) The Government School Students with low School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Government School Students with low School adjustment and unfavourable Attitude towards science.

120) The Government School Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Government School Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

121) The Government School Students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Government School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

122) The Government School Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Government School Students with low School
adjustment, unfavourable Attitude towards science and low Socio-economic status.

123) The Government School Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Government School Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

124) The Government School Students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Government School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

125) The Government School Students with high School adjustment, unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Government School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

126) The Government School Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic
status have more influence on academic achievement of students in science than the Government School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

vii. Private School Students

127) The Private School Students with high School adjustment have more influence on academic achievement of students in science than the Private School Students with low School adjustment.

128) The Private School Students with favourable Attitude towards science have more influence on academic achievement of students in science than the Private School Students with unfavourable Attitude towards Science.

129) The Private School Students with low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with high Socio-economic status.

130) The Private School students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Private School Students with high School adjustment and unfavourable Attitude towards science.

131) The students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of
students in science than the Private School Students with low School adjustment and favourable Attitude towards science.

132) The Private School students with high School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Private School Students with low School adjustment and unfavourable Attitude towards science.

133) The Private School students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Private School Students with low School adjustment and favourable Attitude towards science.

134) The Private School students with high School adjustment and unfavourable Attitude towards science have more influence on academic achievement of students in science than the Private School Students with low School adjustment and unfavourable Attitude towards science.

135) The Private School students with low School adjustment and favourable Attitude towards science have more influence on academic achievement of students in science than the Private School Students with low School adjustment and unfavourable Attitude towards science.
136) The Private School students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment and high Socio-economic status.

137) The Private School students with high School adjustment and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment and low Socio-economic status.

138) The Private School students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment and high Socio-economic status.

139) The Private School students with high School adjustment and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment and low Socio-economic status.

140) The Private School students with low School adjustment and high Socio-economic status have more influence on academic
achievement of students in science than the Private School Students with low School adjustment and low Socio-economic status.

141) The Private School students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status.

142) The Private School students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, favourable Attitude towards science and high Socio-economic status.

143) The Private School students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.
144) The Private School students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

145) The Private School students with high School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

146) The Private School students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status.

147) The Private School students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School
adjustment, favourable Attitude towards science and high Socio-economic status.

148) The Private School students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.

149) The Private School students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

150) The Private School students with high School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

151) The Private School students with high School adjustment, unfavourable Attitude towards science and high Socio-economic
status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

152) The Private School students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

153) The Private School students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, favourable Attitude towards science and high Socio-economic status.

154) The Private School students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, favourable Attitude towards science and low Socio-economic status.
155) The Private School students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status.

156) The Private School students with high School adjustment, unfavourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

157) The Private School students with low School adjustment, favourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

158) The Private School students with low School adjustment, favourable Attitude towards science and low Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School
adjustment, unfavourable Attitude towards science and low Socio-economic status.

159) The Private School students with low School adjustment, unfavourable Attitude towards science and high Socio-economic status have more influence on academic achievement of students in science than the Private School Students with low School adjustment, unfavourable Attitude towards science and low Socio-economic status.

6.8 Delimitations of the Study

Keeping in view the objectives and hypotheses, the present study has been delimited as follows:

(i) The study focussed on the secondary schools located in Chikkodi Educational District.

(ii) Since the dependent variable is the academic achievement in science, only the performance of the students in IX standard science is involved in the study.

(iii) Keeping in mind the quantum of work involved in the study, the investigation was confined only to a particular class that is, IX standard.

(iv) Academic achievement of students is influenced by various factors. However, the present study is confined to certain selected variables like school adjustment, attitude and Socio-economic status.
6.9 Discussion and Conclusion

a) School Adjustment

From the result obtained in the present study, it is found that students high school adjustment has made influence on the academic achievement of students in science than the students low school adjustment in the entire sample, boys, girls, urban students, rural students, government school students and private school students. Adjustment is, to fit, make suitable, adapt, arrange, modify, harmonize or make correspondent.

Thus, when an adjustment is made between two things, it is decided to adapt or modify one or both of them to correspond to each other. In some situations, one of the factors may not be changeable and so the one which is, has to be modified in some way to suit the other. The extension of a ladder by a suitable length to reach an upper story window is a good example of such an adjustment. Wearing of clothes according to the requirements of the seasons is another such example as ordinarily, it is beyond anybody's capacity to change the seasons according to the clothes. Modern technology has, of course, made it possible to adjust the temperature inside houses and workplaces to harmonize with our needs.

Good (1959): Adjustment is the process of finding and adopting modes of behaviour suitable to the environment or the changes in the environment. Warren (1934): Adjustment refers to any operation whereby
an organism or organ becomes more favourably related to the environment or to the entire situation, environmental and internal. *Crow and Crow (1956):* An individual's adjustment is adequate, wholesome or healthful to the extent that he has established harmonious relationship between himself and the conditions, situations and persons who comprise his physical and social environment. Therefore, adjust can be summarized as, *i)* Adjustment is a process that takes us to lead a happy and well contented life; *ii)* Adjustment helps us in keeping balance between our need and the capacity to meet these needs; *iii)* Adjustment persuades us to change our way of life according to the demands of the situation; *iv)* Adjustment gives us strength and ability to bring desirable changes in the conditions of our environment.

Students high adjustment means the student well adjusted in health, emotion, social, home and school adjustment will help the students to achieve more in academic achievement. However, students low adjustment means they are not aware of one's own strengths and limitations, not respecting one's self and the others, not having adequate level of aspiration, not having satisfaction of the basic needs posses critical or fault finding attitude, Non flexibility of his behaviour, are not capable of struggling with odd circumstances, are not satisfied with the surrounding as well as a student does not like school, schoolmates, teachers and feels unsatisfied with the daily routine, perhaps the positive
characteristics features of students with high school adjustment are the proper reasons for its significant influence on academic achievement.


The students low school adjustment, which leads to less influence on academic achievement may be modified through appropriate modification techniques, mental hygiene programmes, individual guidance and counseling may be more suitable.

As almost all the studies conducted in Indian and Abroad support directly or indirectly the findings of the present study. The outcome of the study may be accepted widely.

b) Attitude towards Science

The present study revealed that there is positive and significant effect of favourable attitude of students towards science on academic achievement in case of entire sample, boys, girls, urban students, rural students, government school students and private school students.

Attitudes may be thought of as learned patterns of behaviour which predispose the individual to act in a specific way toward certain
persons, objects, ideas or professions. A more comprehensive definition is that of Allport (1935, p.45), who defines an attitude as a “State of readiness organized through experience exerting a directive and/or dynamic influence upon the individual's response towards all objects or situations with which it is related”. Attitudes can be considered from the standpoint of three basic components: (i) An affective component, which relates feeling aspect, (ii) A cognitive component consisting of the intellectual aspects, and (iii) An action component which predisposes the individual towards specific overt behaviour.

In the present study attitude of the students towards science subject is conceived. The science attitude has been operationally defined as a generalized attitude towards the universe of science content and being measured in terms of its favourableness or unfavourableness estimated from the scores obtained by the subject on an attitude scale towards science comprising of the four categories from the universe of content 'Science Attitude'; Positive intellectual, negative intellectual, positive emotional and negative emotional attitudes. It is a comparatively stable, emotional and learned pattern of behaviour, which predisposes the individual to act in some consistent way towards the subject. It may range between favourable attitude to unfavourable attitude. A favourable attitude make the work not only easier but also more satisfying and professional rewarding. An unfavorable attitude makes the task harder, more tedious and unpleasant.
Attitude is a complex organization of feelings, fears, prejudice, convictions, a person has about a psychological object, or other tendencies that have given a set of readiness to act to a person because of varied experiences (Cave, 1928), a fundamental and basic distinction by Gardner (1975) between 'attitudes towards science' and 'scientific attitudes'. The latter is a complex mixture of the longing to know and understand, a questioning approach to all statements, a search for data and their meaning, a demand for verification, a respect for logic, a consideration of premises and a consideration of consequences (Education Policies Commission 1962); and this aspect has been explored in some depth in a seminal review by Gauld and Hukins (1980). In essence, these are the features that might be said to characterize scientific thinking and are cognitive in nature. However, a clear distinction must be drawn between these attributes and the affective 'attitudes towards science', which are the feelings, beliefs and values held about an object that may be the enterprise of science, school science, the impact of science on society or scientists themselves. It is the latter that constitute the majority of Klopfer's attitude components. These attitude towards science, and what is known and understood about their formation and change during adolescence.

The first stumbling block for research into attitude towards science, is that such attitude do not consist of a single unitary construct, but rather
consist of a large number of sub constructs all of which contribute in varying proportions towards an individual's attitudes towards science.

i) the perception of the science teacher; ii] anxiety toward science; iii) the value of science; iv) self-esteem at science; v) motivation towards science; vi) enjoyment of science; vii) attitudes of peers and friends towards science; viii) attitudes of parents towards science; ix) the nature of the classroom environment; x) achievement in science; and xi) fear of failure on course. The second stumbling block towards assessing the significance and importance of attitudes is that they are essentially a measure of the subject's expressed preferences and feelings towards an object. Consequently, it is behaviour rather than attitude that has become a focus of interest and that has led researchers to explore models developed from studies in science.

The findings of the present study clearly shows that, favourable attitude towards science of the students has influenced more on the academic achievement of the students than the unfavourable attitude towards science.

positive and significant correlation between attitude and academic achievement.

Unfavourable attitude towards science can be minimized in students by the teacher through the conduct of regular science experiments, organization of science association activities and science projects; provision of social services, community life, community dinner and community prayer, as well as organization of school programmes including both curricular and co-curricular activities.

As almost all the studies conducted in India and abroad support directly or indirectly the findings of the present study. The outcome of the study may be accepted widely.

c) Socio-Economic Status

From the result obtained in the present study, it is found that, Socio-economic status has significant effect on academic achievement of students in science in the girls, rural students and government school students. However, it has no significant effect on academic achievement in science in case of entire sample, boys, urban students and private school students.

In this study, the Socio-economic status of the students was indicated by the Socio-economic status of the head of the family which will be determined by the total scores of education, profession, monthly income, total wealth in cash or debts, property, surrounding or locality and social status.
Socio-economic status is defined as the relative position of the family on the continuum of aggregate of weightages assigned to the education, occupation of father or guardian of the student.

According to Good (1973), Socio-economic status as the background or the environment, indicative of both social and economic status of an individual or groups.

Page and Thomas (1977), Socio-economic status as a Rank on position of an individual in the prestige hierarchy of social groups or community.

The study also revealed that low Socio-economic status has less influence on academic achievement in science in case of entire sample, boys, urban students and private school students.

The Socio-economic status of the students as well as the teachers play an important role in their academic achievement or improvement. The students’ attainment depends upon the intelligence, attitude, adjustment and some of the personnel factors like, extroversion and neuroticism. All these factors are mainly depending upon the class room climate and the teacher effectiveness. The Socio-economic status of the students also affects his tendency to improve academically. Cant (1972) expressed that the Socio-economic status is important factor for the academic achievement status of students studying in later primary stage. Gagna (1974) expressed that, the Socio-economic status of the Students becomes the main factor for developing desirable attitude and higher rate
of adjustment amongst the school going students. The higher Socio-economic Students achieved more than the lower Socio-economic Students.

According to Kulik (1982), The Socio-economic and educational status of the parents of the school going children affected the achievement motivation of the students. The recent studies conducted in NCERT and NUEPA showed that, the Socio-economic status of the students belongs to rural area affected the academic achievement of the students and this is also true in case of urban school going students. The Socio-Economic Status explains the Social conditions, the economic conditions of the parents belongs to particular students.

Some of the Indian Studies, namely, Devanesan and Paul (1990), Harikrishnan (1992), Sucharita Parida(2003), Selcuk (2005), Matthews and Catherine (2008), Mohanty [2009], Nalini and Bhatta (2009) Kamble and Pawar (2009), are in line with the findings of the present study.

As almost all the studies in India and Abroad support directly or indirectly the findings of the present study. The outcome of the study may be accepted widely.

**d) Interaction Among 2 Selected Variables**

The students with high school adjustment and favourable attitude towards science have more influence in case of entire sample, boys, girls, urban students, government school students and private school students. However, the non significant effect between the students high
school adjustment and favourable attitude towards science in case of rural school students does not stand logical reasoning. This needs to be cross-validation. No parallel study of exact nature can be quoted here for comparison of results.

The students with low school adjustment and favourable attitude towards science have more influence in case of entire sample, boys, urban students, government school students and private school students. However, this combination has no significant effect in case of girls and rural students. Although students low school adjustment as an independent variable has no significant effect on academic achievement, but its combination with favourable attitude towards science could overcome the adverse effect of students low school adjustment. Hence there is a significant interaction effect in case of selected sub groups. Students high school adjustment with high Socio-economic status have influenced more in case of entire sample, boys, urban students, rural students and private school students. However, its non significant effect in case of girls and government school students is the subject for further verification.

Students low school adjustment along with high Socio-economic status has more influence in case of entire sample, rural students and private school students. However, students low school adjustment being negative quality in the present study has over influenced on high Socio-economic status to nullify its impact.
When favourable attitude and high Socio-economic status taken together its effect is more in case of entire sample and rural students. However, these two variables have failed to bring about the expected changes in the dependent variable in case of boys, girls, urban students, government school students and private school students. Unfavourable attitude towards science with high Socio-economic status has more influence in case of entire and rural students. However, this combination has no significant effect in case of boys, girls, urban students, government school students and private school students. Though unfavourable attitude towards science as an independent variable has no significant effect on academic achievement, but its combination with high Socio-economic status could overcome the adverse effect of unfavourable attitude towards science. Hence, there is a significant interaction effect in case of selected sub-groups.

**e) Interaction among 3 Selected Variables**

The study has also revealed the interesting findings in the 3-way interactions. The students with high school adjustment, favourable attitude towards science and high socio-economic have jointly exerted more influence on academic achievement in case of entire sample, boys, girls, urban students, rural students, government school students and private school students.

The students with high school adjustment and high Socio-economic status have together overcome the negative influence of
unfavourable attitude towards science in case of entire sample, boys, government school students and private school students. However, the effect of unfavourable attitude towards science has dominated the influence of the students high school adjustment and high Socio-economic status in case of the remaining sub-groups. Further, favourable attitude towards science and high Socio-economic status reduced the adverse effect of students low school adjustment in case of the entire sample, urban students and private school students. However, its role in case of other sub-samples may be investigated by further researchers.

Surprisingly favourable attitude towards science overshadowed the negative effect of students low school adjustment and low Socio-economic status in case of entire sample, boys, and private school students. However, these three variables together resulted in insignificant effect on academic achievement in case of girls, urban students, rural students and government school students.

Based on the discussion of the findings of the study, the following conclusions could be drawn:

i) The students with high school adjustment has more influence on academic achievement of students in science than the students with low school adjustment in the entire sample, boys, girls, urban students, rural students, government school students and private school students.
ii) The favourable attitude towards science has greater influence on academic achievement of students in science than the students with unfavourable attitude towards science in the entire sample, boys, girls, urban students, rural students, government school students and private school students.

iii) The high Socio-economic status of secondary school students has more influence on academic achievement of students in science than the students with low Socio-economic status in the girls, rural students and government school students.

iv) The students high school adjustment with favourable attitude towards science have jointly influenced more on academic achievement of students in science than the students with high/low school adjustment and students with favourable/unfavourable attitude towards science in the entire sample, boys, girls, urban students, rural students, government school students and private school students.

v) The students high school adjustment with unfavourable attitude towards science have jointly influenced more on academic achievement of students in science, than the students with low school adjustment and students with favourable/unfavourable attitude towards science in the entire sample, boys, girls, urban students, government school students and private school students.
vi) The students low school adjustment with favourable attitude towards science have jointly influenced more on academic achievement of students in science than the students with low school adjustment with unfavourable attitude towards science in the entire sample, boys, urban students, government school students and private school students.

vii) The students high school adjustment with high Socio-economic status have jointly influenced more on academic achievement of students in science than the students with low school adjustment and students with high/low socio-economic status in the entire sample boys, urban students, rural students and private school students.

viii) The students high school adjustment with low Socio-economic status have jointly influenced more on academic achievement of students in science than the students with low school adjustment and students with high/low socio-economic status in the entire sample boys, urban students, rural students and private school students.

ix) The students low school adjustment with high Socio-economic status have jointly influenced more on academic achievement of students in science than the students with low school adjustment
and students with low Socio-economic status in the entire sample, rural students and private school students.

x) The students favourable attitude towards science with high Socio-economic status have jointly influenced more on academic achievement of students in science than the students with favourable/unfavourable attitude towards science and students with low Socio-economic status in the entire sample and rural students.

xi) The students unfavourable attitude towards science with high Socio-economic status have jointly influenced more an academic achievement of students in science than the students with unfavourable attitude towards science and students with low Socio-economic status in the entire sample and rural students.

xii) The students high school adjustment with favourable attitude towards science and high Socio-economic status have jointly influenced more on academic of students in science than the students low school adjustment with favourable/unfavourable attitude towards science and students high/low socio-economic status in the entire sample, boys, girls, urban students, rural students, government school students and private school students.

xiii) The students high school adjustment with favourable attitude towards science and low Socio-economic status have jointly
influenced more on academic achievement of students in science than the students high/low school adjustment with favourable/unfavourable attitude towards science and high/low socio-economic status in the entire sample, boys, girls, urban students, rural students, government school students and private school students.

xiv) The students high school adjustment with unfavourable attitude towards science and high Socio-economic status have jointly influenced more on academic achievement of students in science than the students low school adjustment with unfavourable attitude towards science and low Socio-economic status in the entire sample, boys, government school students and private school students.

xv) The students high school adjustment with unfavourable attitude towards science and low socio-economic status have jointly influenced more on academic achievement of students in science than the students low school adjustment with favourable/unfavourable attitude towards science and high/low socio-economic status in the entire sample, boys, girls, urban students, rural students, government school students and private school students.
xvi) The students low school adjustment with favourable attitude towards science and high socio-economic status have jointly influenced more on academic achievement of students in science than the students low school adjustment with unfavourable attitude towards science and low socio-economic status in the entire sample, urban students and private school students.

xvii) The students low school adjustment with favourable attitude towards science and low socio-economic status have jointly influenced more on academic achievement of students in science than the students low school adjustment with unfavourable attitude towards science and low socio-economic status in the entire sample, boys and private school students.

xviii) The students low school adjustment with unfavourable attitude towards science and high socio-economic status have jointly influenced more on academic achievement of students in science than the students low school adjustment with unfavourable attitude towards science and low socio-economic status in the entire sample, rural students and private school students.

6.10 Educational Implications

a) School Adjustment

The latest thinking regarding education is that it is essentially a process of human resources development. It can be achieved only by promoting school adjustment of the students, school adjustment should
be the primary education goal. The extent to which this goal is attained reflects the effectiveness of the schools' endeavor. Therefore, it is not surprising that great attention has been paid to the school achievement of students.

School achievement is referred to as an outcome of instruction. It can be assessed by using an achievement test, either a teacher-made test or a standardized test. Such tests typically focus upon such topics as the understanding and application of scientific principles, the interpretation of literature, or the appreciation of art. School achievement may be expressed as an overall grade based on a combination of all the subjects taken or as a grade in a specific subject or course such as science, reading comprehension or other subjects. An achievement test is usually constructed to measure knowledge in a specific subject and the pupils' total grade can be obtained by combining the results of all the tests taken. The purpose of a study indicates what kind of achievement score is to be used.

Research studies concerning school achievement have employed both kinds of achievement scores. However, educational researchers have recently become more interested in looking at scores for specific subjects separately. Most of researches on school achievement have sought to identify the factors responsible for different levels and types of accomplishment among individuals. The method generally used to solve
this problem is to relate achievement scores to some selected variables such as intelligence or aspects of adjustment.

In the present study, the researcher hypothesized that the students with high and low school adjustment differ significantly in terms of their effects on academic achievement in science. Findings of the study clearly reveal that students with high school adjustment has more influence on the achievement in science than the students with low school adjustment. This may be ascribed to the following reasons.

Students well adjusted to school have characteristics of overcoming blocks, reading goals, satisfying motives, relieving frustration and maintaining equilibrium and has own mechanism of maintaining balance in his personality. It is assumed that this kind of good adjustment to school may lead to positive and significant influence on academic achievement in science. The findings of the previous studies though not completely consistent, have tended to indicate these two student variables are important in predicting school achievement suppose, if the findings of the present study are not in tune with the logic employed, this needs cross validation by further investigation.

The students low school adjustment, which leads to ineffective influence on academic achievement in science in the present study may be modified by taking the following measures;
• The school environment should be free from partiality and should provide the feeling of security in students, irrespective of their socio economic status.

• School environment should be democratic. Students representation on various committees should be made.

• School should organise various curricular activities for students.

• Teachers should know the fundamental principles of human behaviour to solve students’ problems. They must be emotionally stable and have positive attitude towards teaching. They should create conducive school climate.

• Students should be encouraged to express their views and feelings on various issues related to school freely.

• Teachers should develop a variety of interests in students so that they can satisfy their emotions.

• Day-to-day problems can be discussed in class.

• Sex and moral education should be an integral part of the school curriculum.

• School can organise guidance services for students.

• There should be flexibility in school activities to accommodate the individual needs of the students.

• Positive teacher's attitude.

• Library and laboratory facilities.
- Playground and indoor game facility.
- Multigym facilities provided to students.
- Vocational trainings given to students.
- Educative documentary films shown to students.
- Medical tests conducted once a year.
- Timetable favourable to students.
- Interesting and innovative techniques of teaching.
- Water and sanitary facilities given to students.
- Congenial atmosphere existing among students.
- Good understanding between principal and teachers.
- Cordial relationship existing between teachers and students.
- Parents are always invited cordially and allowed to discuss about school for betterment.

b) Attitude towards Science

Attitudes are enduring dispositions to react in certain ways towards different objects. They are relatively stable. In other words, they represent the extent of positive or negative affect (feeling) associated with such objects including persons, places, institutions, systems, practices, feelings and ideas. As the feeling towards any of these may be positive or negative, the overall attitude may be said to be favourable or unfavourable. Attitudes are essentially affective, but they have cognitive and conative dimensions as well. They have cognitive content in terms of knowledge and beliefs about the object concerned. This may emerge from
one's sustained experience with the object over a period of time, or from an intense experience in a limited time. In fact, this is the base of the attitude, as the feeling emerges from this cognitive structure which internalized with the accompanying feelings. Attitudes also have a conative dimension, in the sense that, they urge one to behave or respond in certain particular ways in respect of the objects. In other words, they make for certain behavioural tendencies. A positive attitude entails approach behaviour in some form or degree (receive, respond, seek, participate, contribute, love etc.), and a negative or unfavourable attitude makes for avoidance behaviour (avoid, move away from, dislike, oppose, hate etc.).

In the present study, attitude towards science has been conceived. It is a comparatively stable, emotional and learned pattern of behaviour which predisposes the individual to act in some consistent way towards the subject. It may range between favourable attitudes to unfavourable attitude towards science. The findings of the present study reveals that favourable attitude towards science of students has more influence than the unfavourable attitude towards science. This may be due to that a favourable attitude makes the work not only easier but also more satisfying. An unfavorable attitude makes the task harder, more tedious and unpleasant.
The positive characteristics of favourable attitude that is,
i) Likes the subject matter; ii) Likes the teacher or teachers; iii) Likes the classmates; iv) Likes the school generally; v) Starts work promptly; vi) Works with enthusiasm and vigour; vii) Uses spare time advantageously; viii) Follows directions; ix) Takes good care of own property; x) Take good care of other's and public property; xi) Works well with others; xii) Observes safety rules; xiii) Practices good health habits and; xiv) Shows courtesy to others, these characteristics help in higher achievement in science.

In the present study, an unfavourable attitude of the students has less influence on academic achievement in science. Hence, it is essential to influence upon the attitudes of the student for manifestation in a right direction. The following measures will be helpful in bringing favourable attitude in students,
i) Students should be encouraged to participate effectively in all activities of the school specially in science club, science fair, science museum and science exhibition, so that they can come out with their latent talents; ii) Students should be given all laboratory facilities to conduct experiments in schools. iii) Research and innovation should be made part and parcel of school programme; iv) Teachers should be given in-service education. The in-service education not only enhances the teaching efficiency of the teacher but also the learning rate of students; v) Above all, teachers also should do some introspection and resolve to
dedicate themselves to the service of learners and society. Their life style should set a model to others in promoting scientific attitude; vi) Teachers should help students to develop rationality, curiosity, open-mindedness, personal confidence, aversion to superstitions, intellectual belief, suspended judgement etc, as these variables are good predictors of achievement of science students; vii) Teachers should sublimate the emotions of children and enable them to develop the sentiments and honesty, patriotism, justice etc.; viii) Pupils should be encouraged to read the biographies of great men and women. Similarly, stress should be laid on the need to study the scriptures. Moral problems should be given importance in the debates meant for pupils; ix) If the ideals and traditions of ancient Indians are explained to the pupils, promotion of character becomes easy; x) There should be provision for social services, community life, community dinner and community prayer; xi) Teacher’s personality and behaviour should be such as to be an ideal for the pupils to whom they should offer worthy suggestions. It is also necessary for teachers to remove the inferiority or superiority complex that may be in their pupils.

The organization of school programmes which includes both curricular and co-curricular activities, following of time-table, making use of laboratory, library and play ground facilities etc., helps in acquiring various personality characters. The school also provides opportunity to inculcate the feeling and group work culture in a
democratic set up also helps a child to acquire desirable personality characters.

In school, the child looks up to and identifies with teacher, considers the teacher as wise and clever and imitates as a model. Hence, teacher himself must possess all the good qualities of personality. Teacher must be affectionate towards children, adopting democratic way of dealing with teaching-learning process in the classroom, encouraging the students to take-up the tasks independently striving to achieve their goals.

c) Socio-economic status

In the present study, the investigator hypothesised that high and low Socio-economic status differ significantly in terms of their effect on academic achievement in science. The study clearly revealed that students with high Socio-economic status influence more on academic achievement in science than the students with low Socio-economic status.

The term ‘Socio-economic status’ is the relative position of the family on the continuum of aggregate of weightages assigned to education, occupation of father or guardian of the student. Ojha (1970) reported that the higher Socio-economic status, the better would be the academic achievement of the students at high school level, parental education, occupation and income were also related with educational
achievement of both rural and urban boys. Heintz (1949), surveyed the social status and emotional adjustment of eight-grade pupils, his findings were as follows:

- Lower-class boys had strong desires to leave school and go to work. They were ill at ease in the presence of the principal. They also felt that teachers over emphasized good order and discipline, did not praise them when they did good work, and did not permit them to express themselves fully.

- Lower-class girls felt that they were not welcome in school clubs and that teachers permitted a few students to monopolize the attention of the class.

- Middle-class children of both sexes were more satisfied with rules and regulations, and did not feel that good order and conduct were over stressed, or that teachers were too strict, or that they tended to embarrass students.

- Upper-class students felt that teachers failed to accept them as friends (especially boys), that school activities were slowly run, and that teachers preached too much (specially girls).

The schools should conduct parent-teachers meeting to discuss about students socioeconomic problems, irrespective of their background. This will establish a sense of equality among students. The parents -teachers meetings. Parents' suggestions should be followed up by schools. If the parents' participation is more in the school meetings,
students develop confidence in themselves; they can give up fear complex existing towards school administration, head of the institution, and teachers. It will easy the school management to frame scholastic policies to improve students' achievement.

The findings of the present study revealed that, low Socio-economic status has less influence on academic achievement in science when compared to high Socio-economic status.

Educators, researchers and policy makers are concerned about the degree to which students from lower socioeconomic backgrounds are systematically disadvantaged in regard to performance at school, school completion, and participation in post-secondary education and training. Such disadvantage is simply 'not fair' in a modern democratic society. When a relationship between social background and educational achievement is present, then it follows that students from disadvantaged backgrounds face disadvantages at school and later in adult life. Furthermore, it follows that there will be a less efficient matching of ability with occupational destinations, leading to wastage of human resources and arguably economic inefficiencies.

Most educational reforms of the last half-century have attempted to make the system fairer so that student performance at school is not related to the socioeconomic background and other ascribed characteristics of the student. In supporting with the above statement the state government has taken up many programmes to help the poor.
students, that is mid day meals, bicycle, school uniforms, free textbooks, scholarships etc., to increase enrolment and achievement of students in school.

6.11 Suggestions for Further Research

While conducting the study a need for understanding a few specific research studies relating to the field was felt. The suggestions for such studies are enumerated here under two categories: One studies that arise out of the limitations of the present investigation and the other studies that are related to the field.

a) Studies Arising out of the Limitations of the Present Investigation

- Development of valid and reliable rating scale to measure the attitude of secondary school students towards science.
- Development of valid and reliable adjustment inventory to measure the school adjustment of secondary school students.
- A critical study of influence of selected student variables on academic achievement of students in all the classes of secondary schools.
- An interaction effect of influence of selected student variables on academic achievement of students in all the school subjects of secondary schools.
- The study may be repeated involving larger sample of students as well as schools at the secondary level.
• The study with the same design may be conducted to investigate the relationship of students school adjustment, attitude and socio-economic status with academic achievement of students in all the school subjects.

• Study may be undertaken to investigate the relative contributions of the variables—students school adjustment, attitude and socio-economic status on academic achievement in all the school subjects.

• The present investigation is confined to interaction effect of students school adjustment, attitude and socio-economic status on academic achievement of students. However, further analysis may be carried out to study the direct and indirect effect of these variables on dependent variable using path analysis technique.

b) Studies Related to the Problem

• Similar study may be undertaken to investigate the interaction effect of students school adjustment, attitude and socio-economic status at the primary level, +2 level and at the university level.

• Study may be undertaken to investigate the interaction effect of teachers adjustment, teachers attitude and study habits on academic achievement of students in all the school subjects.

• A study of interaction effect of student variables namely school adjustment, attitude and socio-economic status may be undertaken keeping in view the residential schools like Morarji
Desai Residential School, Jawahar Navodaya Vidyalayas, Sainik Schools etc.,

- A comparative study of students studying at primary, secondary, pre-university and university level may be undertaken with the same research design.

- A comparative study may be undertaken to investigate the interaction effect of students school adjustment, attitude and Socio-economic status of students studying in residential schools and non-residential schools.

- An impact study may be undertaken to investigate the effect of school climate on adjustment, attitude and socio-economic status of students at primary, secondary, pre-university and university levels.