CHAPTER V

FINDINGS OF THE STUDY
AND DISCUSSION OF THE RESULTS

Every research study after analyzing the data and interpretation findings are emerged which are directional for the problem under study. In the present study the investigator analyzed the data with the help of proper statistical techniques interrupted according to the observations made in the study. Following are the findings of the study;

5.1) Major Findings

5.1.1) Entire Sample

1. The students with introversion and low neurotic personality type have achieved more in science than the students of extraversion and high neurotic personality characteristics.

2. The students with favourable attitude towards science have achieved more than the students with unfavourable attitude towards science.

3. The teachers with effective teaching type have influenced more academic achievement of students in science than the teachers with ineffective teaching type.

4. The students with introversion and low neurotic personality type and having favourable attitude towards science have
achieved more than the students with unfavourable attitude towards science subject.

5. The students with introversion and low neurotic personality type and having favourable attitude towards science have achieved more academically in science than the students with extraversion and high neurotic type with favourable attitude towards science.

6. The students with extraversion and high neurotic with favourable attitude towards science have also achieved more in Science than the students with unfavourable attitude towards science.

7. The students with introversion and low neurotic personality type with effective teaching by the teachers have influenced more on academic achievement of students in science than the students taught by ineffective teaching by the teachers.

8. The students with introversion and low neurotic personality type with effective teaching of teachers have influenced more on academic achievement in science than the students with extraversion and high neurotic with effective teaching.

9. The students with extraversion and high neurotic personality type with effective teaching of teachers have influenced more on their academic achievement than the students taught by the teachers with ineffective teaching.

10. The students with introversion and low neurotic personality type with favourable attitude towards science and effective teaching by teachers have influenced more on academic achievement on science by the students than the students with unfavourable attitude towards science and taught by ineffective teaching by the teachers.
11. The students with introversion and low neurotic personality type with favourable attitude towards science and effective teaching by teachers have influenced more on academic achievement of students in science than the students with extraversion and high neurotic with favourable attitude and ineffective teaching of teachers.

12. The students with introversion and low neurotic personality type with favourable attitude towards science and effective teaching by teachers have influenced more on academic achievement of students in science than the students with extraversion and high neurotic with unfavourable attitude towards science even though with effective teaching of teachers.

13. The students with introversion and low neurotic personality type and favourable attitude towards science and ineffective teaching of teachers have influenced more on academic achievement of students in Science than the students with extraversion and high neuroticism with favourable attitude towards science and ineffective teaching of teachers.

14. The students with introversion and low neurotic personality type with favourable attitude towards science and ineffective teaching of teachers have influenced more on academic achievement in science of students than the students with introversion and low neurotic personality type, unfavourable attitude towards science and ineffective teaching by teachers.

15. The students with introversion and low neurotic personality type with ineffective teaching by teachers have influenced more on academic achievement of students in science than the students with extraversion and high neurotic personality
type, unfavourable attitude towards science even though effective teaching by teachers.

16. The students with introversion and low neurotic personality type with favourable attitude towards science even though ineffective teaching by teachers have influenced more on academic achievement of students in science than the students with introversion and low neurotic and unfavourable attitude towards science with ineffective teachers by teaching.

17. The students with extraversion and high neurotic with favourable attitude towards science and with the help of effective teaching by teachers have influenced more on academic achievement of students in science than the students with introversion and low neurotic type with unfavourable attitude towards science and ineffective teaching by teachers.

18. The students with extraversion and high neurotic with favourable attitude towards science with the help of effective teaching by teachers have influenced more on academic achievement of students in science than the students with extroversion and high neurotic with unfavorable attitude towards science even though with the help of effective teaching by the teachers.

19. The students with extraversion and high neurotic with favourable attitude towards science with the help of effective teaching by teachers have influenced more on academic achievement the students in science than the students with introversion and low neurotic with unfavourable attitude science even though with the help of effective teaching of teachers
20. The personality characteristics like introversion and low neurotic students achieved more than the introversion and high neurotic students.

21. The personality characteristics like introversion and high neurotic students achieved more than the extraversion and low neurotic students.

22. The personality characteristics like introversion and low neurotic students achieved more than extraversion and high neurotic students.

5.1.2) Male Teachers

23. The male teachers have influenced more on academic achievement of the students with introversion and low neurotic type than the students with extraversion and high neurotic personality type.

24. The male teachers with effective teaching have influenced more on academic achievement of students in science than the male teachers with ineffective teaching.

25. The male teachers with effective teaching have influenced more on academic achievement in science for the students with introversion and low neurotic personality type than the male teachers with ineffective teaching for the students of introversion and low neurotic type.

26. The male teachers with effective teaching for the students with introversion and low neurotic personality type have influenced more on academic achievement of students in science than the male teachers with ineffective teaching for
the students with extraversion and high neurotic personality type.

27. The male teachers with effective teaching for the students with extraversion and high neurotic personality type have influenced more on academic achievement of students in science than the male teachers with ineffective teaching for the students with extraversion high neurotic personality type.

28. The male teachers with effective teaching for the students with introversion and low neurotic type and favourable attitude towards science have influenced more on academic achievement of students in science than the male teachers with ineffective teaching for the students with introversion and low neurotic with unfavourable attitude towards science.

29. The male teachers with effective teaching for the students with introversion and low neurotic personality type favourable attitude towards science have influenced more on academic achievement of students in science than the male teachers with effective teaching for the students with extraversion and high neurotic personality type and having favourable attitude towards science.

30. The male teachers with effective teaching for the students with introversion and low neurotic personality type with unfavourable attitude towards science have influenced more on academic achievement of students in science than the male teachers with ineffective teaching for the students with extraversion and high neurotic personality type and having unfavourable attitude towards science.
31. The male teachers with ineffective teaching for the students with introversion and low neurotic personality type with unfavourable attitude towards science have influenced more on academic achievement of students in science than the male teachers with ineffective teaching for the students with extraversion and high neurotic personality type and also having unfavourable attitude towards science.

32. The male teachers with effective teaching for the students with introversion and low neurotic personality type with favourable attitude towards science have influenced more on academic achievement of students in science than the male teachers with ineffective teaching for the students with extraversion and high neurotic personality type with unfavorable attitude towards science.

33. The male teachers with effective teaching for the students with extraversion and high neurotic personality type with favourable attitude towards science have influenced more on academic achievement of students in science than the male teachers in effective teaching for the students with extraversion and high neurotic personality type having unfavourable attitude towards science.

5.1.3) Female Teachers

*It was found that;*

34. The female teachers have influenced more on academic achievement of students in science who are having favourable attitude towards science than the students with unfavourable attitude.
35. Female teachers with effective teaching have influenced more on academic achievement of students in science than the female teachers with ineffective teaching.

36. The female teachers with effective teaching for the students with introversion low neurotic personality type have influenced more on academic achievement in science than the female teachers with ineffective teaching for the students with extroversion and high neurotic personality type.

37. The female teachers with effective teaching for the students with favourable attitude towards science have influenced more on academic achievement in science than the female teachers with effective teaching for the students with unfavourable attitude towards science.

38. The female teachers with effective teaching for the students with favourable attitude towards science have influenced more on academic achievement in science than the female teachers with ineffective teaching for the students having unfavourable attitude towards science.

39. The female teachers with effective teaching for the students with introversion and low neurotic personality type and having favourable attitude towards science have influenced more on academic achievement in science than the female teachers with ineffective teaching for the students with extraversion and high neurotic personality type and developed unfavourable attitude towards science.

40. The female teachers with ineffective teaching for the students with introversion and low neurotic personality type and having favourable attitude towards science have influenced
more on academic achievement in science than the female teachers with ineffective teaching for the students with extraversion and high neurotic personality and having unfavourable attitude towards science.

5.1.4) **Teachers with Higher Qualifications**

*It was found that*;

41. The teachers with higher qualification have influenced more on academic achievement in science for the students with introversion and low neurotic personality type than the teachers with higher qualification for the students with extraversion high neurotic type.

42. The higher qualification of teachers with effective teaching have influenced more on academic achievement of students in science than the teachers with higher qualification having ineffective teaching.

43. The higher qualification of teachers with effective teaching for the students with introversion and high neurotic personality type have influenced more on academic achievement in science than the highly qualified teachers with ineffective teaching for the students with extraversion and high neurotic personality type.

44. The higher qualification teachers with effective teaching for the students with favourable attitude towards science have influenced more on academic achievement in science than the higher qualification teachers with ineffective teaching for the students with unfavourable attitude towards science.
5.1.5) Teachers with Minimum Qualifications.

It was found that;

45. The teachers with minimum qualification have influenced the students with introversion and low neurotic personality type to achieve more in science than the teachers with minimum qualification for the students with extraversion and high neurotic personality type.

46. The teachers with minimum qualifications have influenced the students with favourable attitude towards science to achieve more in science than the teachers with minimum qualification for the students with unfavourable attitude towards science.

47. The teachers with minimum qualifications have influenced more for the students with introversion and low neurotic personality type and having favourable attitude towards science to achieve more in science than the teachers with minimum qualification for the students with introversion and low neurotic personality type and having unfavourable attitude towards science.

48. The teachers with minimum qualifications have influenced more for the students with introversion and low neurotic personality type for having favourable attitude towards science on academic achievement in science than the teachers with minimum qualification for the students with extraversion and high neurotic personality type and also having unfavourable attitude towards science.

49. The teachers with minimum qualification have influenced more for the students with extraversion and high neurotic

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personality type and having favorable attitude towards science for the academic achievement in science than the teachers with minimum qualification for the students with extraversion and high neurotic personality type with unfavourable attitude towards science.

5.1.6) Teachers with Higher Teaching Experience

It was found that;

50. The teachers with high experience have influenced more on academic achievement in science for the students with introversion and low neurotic personality type than the the students with extraversion and high neurotic personality type.

51. The teachers with high experience and effective teaching have influenced more on academic achievement of students in science than the highly experienced teachers with ineffective teaching.

52. The teachers with high experience have influenced more on academic achievement in science for the students with introversion low neurotic personality type and having favourable attitude towards science than the highly experienced teachers teaching for the introversion low neurotic personality type and having unfavourable attitude towards science.

53. The teachers with high experience have influenced more on academic achievement in science for the students having introversion low neurotic personality type and favourable attitude towards profession than the students with
extraversion and high neurotic personality type with unfavourable attitude towards science.

54. The teachers with high experience have influenced more on academic achievement in science for the students with introversion and low neurotic personality type and favourable attitude towards science than the students with extroversion high neurotic personality type and having unfavourable attitude towards science.

55. The teachers with high experience with effective teaching have influenced more on academic achievement in science for the students with favourable attitude towards science than the teachers with effective teaching for the students with unfavourable attitude towards science.

56. The teachers with high experience effective teaching with influence more on academic achievement on science for the students with favourable attitude towards science than the highly experienced teachers with ineffective teaching for the students with favourable attitude towards science.

57. The teachers with high experience with effective teaching have influenced more on academic achievement in science for the students with favorable attitude towards science than the highly experienced teachers with ineffective teaching for the students with unfavorable attitude towards science.

58. The teachers with higher experience with effective teaching have influenced more on academic achievement in science for the students with introversion and low neurotic personality type and developed favourable attitude towards science than the highly experienced teachers with effective teaching for the
students with introversion and low neurotic personality type and developed unfavourable attitude towards science.

59. The teachers with higher experience with effective teaching have influenced more on academic achievement in science for the students with introversion and low neurotic personality type and with favourable attitude towards science than the highly experienced teachers with ineffective teaching for the students with introversion and low neurotic personality type developed unfavourable attitude towards science.

60. The teachers with high experience with effective teaching have influenced more on academic achievement in science for the students with introversion and low neurotic personality developed favorable attitude towards science than the highly experienced teachers with ineffective teaching for the students with extraversion high neurotic personality type and developed favorable attitude towards science.

61. The teachers with high experience with effective teaching have influenced more on academic achievement in science for the students with introversion low neurotic personality type with favourable attitude towards science than the highly experienced teachers with effective teaching for the students with extroversion and high neurotic personality type developed unfavorable attitude towards science.

62. The teachers with high experienced and effective teaching have influenced more on academic achievement in science for the students with introversion and low neurotic and developed favourable attitude towards science than the highly experienced teachers with ineffective teaching for the students
with extroversion and high neurotic personality type and developed unfavourable attitude towards science.

63. The teacher with higher experienced with effective teaching have influenced more on academic achievement in science for the students with extroversion and high neurotic personality type with favourable attitude towards science than the highly experienced teachers with ineffective teaching for the students with introversion low neurotic personality type with unfavourable attitude towards science.

64. Teachers with higher experience with effective teaching have influenced more on academic achievement in science for the students with extroversion and high neurotic personality type with favourable attitude towards science than the highly experienced teachers with ineffective teaching for the students with extroversion and high neurotic personality type eventhough developed favourable attitude towards science.

65. The teachers with higher experienced with effective teaching have influenced more on academic achievement in science for the students with extroversion and high neurotic personality type with favourable attitude towards science than the teachers with high experienced with effective teaching for the students having extroversion and high neurotic type with unfavorable attitude towards science.

66. The teachers with higher experience with effective teaching have influenced more on academic achievement in science for the students with extroversion high neurotic personality type and having favourable attitude towards science than the teachers with higher experience and ineffective teaching for
the students having extroversion and high neurotic personality type developed unfavourable attitude towards science.

5.1.7) Teachers with lower Teaching Experience

It was found that;

67. The teachers with lower experience can influence more on academic achievement in science for the students having introversion and low neurotic personality type than the students having extroversion and high neurotic personality type.

68. The teachers with lower experience have influenced more on academic achievement in science for the students having favourable attitude towards science than the teachers of low experience for the students having unfavourable attitude towards science.

69. The teachers with lower experience have influenced more on academic achievement on science for the students with introversion and low neurotic personality type and developed favourable attitude towards science than the low experienced teachers with the students having introversion and low neurotic personality type and developed unfavourable attitude towards science.

70. The teachers with lower experienced have influenced more on academic achievement in science for the students with introversion and low neurotic personality type and developed favourable attitude towards science than the low experience teachers for the students with extroversion and high neurotic
personality type and developed favourable attitude towards science.

71. The teachers with lower experience have influenced more on academic achievement in science for the students with introversion and low neurotic personality type and favourable attitude towards science than the low experienced teachers students with extroversion and high neurotic personality type and unfavourable attitude towards science.

72. The teachers with lower experience have influenced more on academic achievement in science for the students having introversion and low neurotic personality type eventhough they developed unfavourable attitude towards science than the low experienced teachers for the students having extroversion high neurotic personality type developed unfavourable attitude towards science.

73. The teachers with lower experience have influenced more on academic achievement in science for the students having extroversion and high neurotic personality type and favorable attitude towards science than the low experienced teachers for the students having extroversion and high neurotic personality type developed unfavourable attitude towards science.
5.2] Correlational Study Results

5.2.1) The relationship between Students Personality and Academic Achievement.

1) It is found that, students personality type like introversion, extroversion and neuroticism affects the academic achievement of the students.

   a) Introversion and low neurotic students achieved more than the introversion and high neurotic students.

   b) Introversion and high neurotic students achieved more than the extroversion low neurotic students.

   c) Extroversion and low neurotic students achieved more than the extroversion high neurotic students.

   d) Extroversion and high neurotic students achieved less than the other type of students.

5.2.2) Students attitude towards Science and Academic Achievement.

a) The students with favourable attitude towards science achieved more than the students with unfavourable attitude towards science.
5.2.3) Teacher Teaching Effectiveness and Academic Achievement.

a) The students taught with effective teaching strategy have achieved more than the teachers taught with ineffective teaching strategies.

b) The male teachers with effective teaching strategies influenced the students to achieve more than the male teachers with ineffective teaching strategies.

c) The female teachers with effective teaching strategies influenced the students to achieve more than the female teachers with ineffective teaching strategies.

5.2.4) Teachers Qualifications and Teaching Experience and Academic Achievement.

a) The teachers with higher qualification influenced the students to achieve more than the teachers with lower qualifications.

b) The teachers with higher experienced influenced the students to achieve more than the teachers with less experience in the profession.

5.3) Regression Analysis

The investigator carried out multiple linear regression of independent variables – Personality types and attitude of the students
and teacher effectiveness on dependent variables – Academic achievement of the students. This method, multiple correlation and multiple linear regression revealed the degree to which each independent variables is related to dependent variable that is academic achievement in science.

The results shows that the estimation of academic achievement of students in science is possible on the basis of students personality (X1) attitude towards science (X2) and teachers teaching effectiveness (X3) predictors. It is clear from the analysis that the students personality like introversion and low neurotic contributes better than the other two (11.05%) predictors. Similarly, the next factor students attitude towards science contributes much for the achievement (8.98%). Then the teachers teaching effectiveness (7.03%).

5.4) Path Analysis

The regression analysis carried out with the help of standardized variable has come to be known as path analysis. It is worth noting that one value of path coefficient as regression coefficient of the standardized variable or the same in their values as those of correspondence correlation coefficient in the magnitude the path coefficient or directional, but co relational coefficient or not directional. Though both or independent of the units of measurements of correspondent variable.
a) There is a direct relationship between personality factors like, introversion, extroversion and neuroticism of the students towards the academic achievement.

b) The indirect effect of students personality (X1) through attitude towards science (X2) and teacher teaching effectiveness (X3) have positive impact on academic achievement in science.

c) The indirect effect of students attitude towards science (X2) through student’s personality (X1) and Teachers Teaching Experience (X3) have also positive impact on academic achievement in science.

d) The indirect effect teachers teaching effectiveness (X3) through students personality (X1) and attitude towards science (X2) have positive effect on academic achievement in science

5.5) Discussion of Results

5.5.1) Teachers' Teaching Effectiveness

From the results obtained in the present study it is found that effective teaching has significant effect on academic achievement on students in science in the entire sample. Male teachers, female teachers
with higher qualifications and teachers higher teaching experience. However, it is has not significant effect on academic achievement in science in case of teachers' with minimum qualification and having lower teaching experience. This implies that, teachers teaching effectiveness is increased along with the improvement in qualification as well as teaching experience. From this a conclusion may be drawn that teachers with higher qualification and higher teaching experience always possess effective teaching which results in a better achievement for the students.

The term 'teaching effectiveness' in the present study is used to refer to the results a teacher gets or to the amount of progress the pupils make towards some specified goal of education. An implication of this definition is that teacher effectiveness must by defined and can only be assessed, in terms of behaviour of pupils, not the behaviours of teachers. Hence, in the present study, the investigator made an attempt to collect students’ rating in order to measure teaching effectiveness. Further the term teaching effectiveness is also defined by scholars in various ways. Biddle and Ellena(1964) said 'teacher effectiveness is the ability of teacher to produce for agreed upon educational effects in a given situation or context'.

Gage(1962) has described 'teacher effectiveness' in terms of teachers effect on the realization some values were these values take the
form of some educational objectives defined in terms of desired pupils behaviour, abilities or characteristics.

Gupta (1976) derived the term ‘teacher effectiveness’ as a repertoire (abilities) of efficacy exhibited by a teacher in instructional strategies, classroom management, personal disposition, temperament and tendencies, evaluation and feedback, interpersonal relationship, job involvement, initiative and enthusiasm, professional values and innovativeness in every day teaching - learning situation.

Kulsum (1982) identified the dimensions of teacher effectiveness as: preparation and planning for teaching, classroom management, knowledge of the subject, teachers Characteristics, interpersonal relations.

Debnath, H. N. (1971) identified professional training, intelligence, interest in teaching, friendliness, democratic behaviours, ability to judge reactions of others and possession of all information as correlates of teaching efficiency. Sathyagirirajan (1985) found that teaching effectiveness is related to intelligence, emotional stability, conscientious tender mindedness, trusted nature, placed nature, self-sufficiency and relaxedness factors of Cattell's 16 PF questionnaire.

The monumental Common Wealth Teacher Training Study (Charters and Waples, 1929) listed twenty-five characteristics of effective
teachers. The top six on a list of twenty-five were: adaptability, considerateness, enthusiasm, good judgement, honesty and magnetism.

The significant effect of teaching effectiveness on academic achievement in the present study shows that the mathematics teachers who are involved in the present study possess the above-mentioned characteristics.

The finding of the present study is supported by parallel studies conducted by Debanath, H.N. (1971); Gupta, G.P. (1978); Mutha (1980); Veeraraghavan, V. and Bhattacharya, R (1989); Gangopadhyaya TappanKanti (1991); showed the positive and significant correlation between teaching effectiveness and academic achievement.

The studies conducted so far identified the characteristics of an effective teacher as: knowledge of subject matter, sincerity in teaching mastery of the method of teaching, higher academic qualifications 9Debnath, 1971); and more intelligent, emotionally stable, sober, conscientious, shrewd, relaxed, favourable attitude towards teaching, more effective in their work efficiency (Kaul, 1972).

Mutha (1980), studied the personality characteristics of the effective and ineffective teachers. The study revealed that: (i) Sex, professional training, nature of schooling and income level were significantly associated with the teacher's effectiveness. (ii) The effective teachers had significantly higher scores on intelligence than the
ineffective. (iii) The effective teaches had higher scores on anxiety than the ineffective. (iv) The effective teaches had significantly higher scores on teaching aptitude than the ineffective. (v) The effective teachers had significantly higher scores on neuroticism than the ineffective. (vi) The effective teacher had significantly higher scores on theoretical value than the ineffective. (vii) The ineffective teachers had significantly higher scores on political value than the effective. (viii) The effective teachers had significantly higher scores on job satisfaction than the ineffective. (ix) The set of personality variables—ascendance-submission, anxiety, marital adjustment, extroversion, neuroticism, job satisfaction and teaching attitude—significantly predicted the teacher effectiveness. (x) Personality variables—ascendance—submission, anxiety, marital adjustment, extroversion, neuroticism, job satisfaction, teaching aptitude, real self-ideal self-discrepancy, religious value, social value, theoretical value, aesthetic value, economic value, political value and intelligence—significantly predicted the teachers' effectiveness.

The study also revealed that ineffective teaching has less influence on academic achievement in case of entire sample, male teachers, female teachers, teachers with higher qualifications and teachers with higher teaching experience. The findings of the study conducted by Debanath (1971) showed that age, experience, academic achievement and professional training of teachers are significantly related to teaching efficiently. Hence, in order to improve academic achievement of in-service
teachers, provisions may be made in the distance education programmes to introduce courses related to teaches and teacher education. Provision of sabbatical leave for the teaches extending upto 6-12 months may be made to the secondary school teachers. Further, in order to strengthen the professional competency of in-service teachers series of General Orientation courses, subject-oriented courses are to be organized at the CTE and IASE levels. At the national level NCERT, and at State level DSERT may organise conferences, seminars, workshops, etc., are to be organized in the special interest of secondary school teaches. As almost all the studies in India support directly or indirectly the findings of the present study, the outcome of the study may be accepted widely.

5.5.2) Students Personality

From the results obtained in the present study it is found that, students with introversion and low neurotic personality type achieved more than the students with extroversion and high neurotic personality type in the entire sample. The students personality of this type has some effect on sex of the teachers. Male teachers influenced more for the students with introversion and low neurotic personality type than the extroversion and high neurotic personality type students. Similarly, the female teachers also influenced more for the students with introversion and low neurotic personality type than the extroversion and high neurotic personality type students. Similarly, the teachers with higher
qualification and experience influenced the students with introversion and low neurotic to achieve more in science than the students with extroversion and high neurotic personality type. This means the students with introversion and low neurotic personality type are having stable mind and involved in learning process with full concentration. These individuals tending to react from the external word engage in meditation absorbing in his own taught and generally approaching life from the standpoint of his or her own subjective values (Singh and Singh 1979). Where as, extroversion and high neuroticism is a tendency of an individual orientating towards external word, doing rather than thinking and approaching life as orientated and related to the object rather than to himself, the significant effect of students introversion and low neurotic personality type on academic achievement may be due to that, these students are intelligent venturesome, tough minded, shrewd, controlled, constructive, autonomy, appear cold, aloof, silent, hard to understand, socially inept, inarticulate in their attempt to communicate their ideas, they neither shine nor reveal themselves, subjective outlook, have high degree of cerebral activity, healthy and balanced philosophical and cultural outlook, good habits of daily life, well developed moral life, social, command over language, emotionally stable, sober, conscientious, reflective, gold direction, satisfaction, democratic and accommodative the students with introversion and low neurotic personality type are characterized positively by intense feeling of sympathy for others, the
ability to envision the future, the intensity of subjective sensations and
an imitations and an ability to think originally and boldly. However, the
students with extroversion and high neurotic personality type or
characterized by a change in emotion from situation to situation along
with indiscrimination yielding to the expectations of others. Impatience
and flightiness crude pleasure seeking, a selfish and exploitative at
attitude towards others, tender mindedness, suspiciousness. Self-
sufficiency, placidity, relaxedness, frication, exitedness facing difficulties,
apathy, disorganization, full of tension, quarreling attitude, confusion in
the class, lack of affinity with class favoritism, dominance and
leadership. Perhaps the positive characteristics of introversion and low
neurotic personality type of students or the proper reasons for its
significant influence on their academic achievement.

The results obtained by the investigator like Quaraishi (1972), Kaul
Dilip Kumar (1979), Sansanwal and Gurpal Jarial (1979), Roy, Neelam
(1989), Thamil Mani (1990), Yadav, Ghamandi, Lal (1982) or in line with
findings with present study.

The students extroversion and high neurotic personality type
which leads to less influence on academic achievement may be modified
through appropriate modification teaching techniques and individual
guidance and counseling therapeutic continuum may be more suitable.
Almost all the studies conducted in India and in abroad support directly or indirectly the findings of the present study.

5.5.3) Students attitude towards science

The present study reveals that there is positive and significant effect of favourable attitude of students towards science leads to more academic achievement in case of entire sample. Female teachers minimum qualification and lower experience has no effect on academic achievement but in case of male teachers with higher qualification and teaching experience developed favourable attitude amongst the students towards science.

Attitude may taught of as learned patterns of behaviour which predispose the individual to act in a specific way towards certain persons, objects, ideas or professions. A more comprehension definitions is that of Alport (1935) who defines an attitude as a “State of Readiness” organised through experienced excreting a directive and / dynamic influence upon the individual’s response toward all objects or situation with which is related”. Attitudes can be considered form the stand point of these basic components” ; 1) An affective component, which relates feeling aspects, 2) A cognitive component consisting of the intellectual aspects and 3) An action component which pre-dispersions the individual towards specific overt behaviour. In the present study students attitude towards science is considered from the stand point of an action
components. This component exist at various levels of intensity and in various degrees of independence of one another. A student may have a rather clear cognitive view of his learning the subject but have no great feeling about it and having no inculcation to take any action concerning its transmission. Thus, students attitude towards science is jointly determined by all the above three basic components. The findings of the present study clearly shows that favourable attitude of the students towards science has influenced on their academic achievement than the unfavourable attitude of students towards science.


Favourable attitude of the secondary school students toward science may be due to the incentive given by the teachers and organization of science activities with the help of science club and effective teaching by the teacher on one hand and on the other the school developed science resources properly and supplied instructional material to the teaching learning process both for the teachers and students and availability of science journals and encyclopedias. The job security and job satisfaction of teachers also adds to development of such attitude amongst the students.
The unfavourable attitude of students towards science is mainly due to the ineffective teaching by the teachers, lack of instructional materials, lack of modern equipment like TV, DVD, Tape recorder, OHP, Sliodometric projector and computer. The absence of science club activities and journals and encyclopedias also led to the students getting unfavourable attitude towards science. In some cases teachers with very low experience and qualification also led to the unfavourable attitude. Some teachers are rigid and autocratic in nature. Some of the other teacher have low job satisfaction and no job security. Hence, they are unable to initiate the students to learn effectively. Such teachers cannot perform experiments science for the students.

Measures are to be taken at the State and National Level to improve working condition of the teachers in order to create favourable attitude towards science amongst the students by supplying science kits and establishment of science centres like, Science Research Development Centres conduct orientation and refresher programmes for the science teachers. There should be scope for science teacher to improve their qualifications. State level and national level science exhibitions should be organize and initiate the science teachers to participate along with the students in such organizations.

5.5.4) Interaction among two selected variables

When the personality factors of the students and attitude towards science variables are taken into consideration the introversion and low
neurotic personality type with favourable attitude towards science have
more influence on academic achievement on students in case of entire
samples, teachers with minimum qualification and teachers with higher
and lower teaching experience. However, the non-significant between the
introversion and low neurotic personality type and favorable attitude of
students in case of male teachers, female teachers and teachers with
higher qualification does not stand logical reasoning. This needs to be
cross validated. No parallel study of exact nature can be quoted here
comparison of results.

The extroversion and high neurotic personality type and favourable
attitude of students have more influence on academic achievement in
case of entire sample the teachers with minimum qualification and
teaching experience. However, this combination has no significant effect
in case of male and female teachers, teachers with higher qualification
and higher teaching experience. Although extroversion and high neurotic
personality 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 extroversion and
high neurotic personality type. Hence, there is a significant Interactive
effect in case of selected sub-groups.

Introversion and low neurotic personality type together with
effective teaching has influenced more in case of entire sample, male and
female teachers and teachers with higher qualifications. However, its non-
significant effect in case of teachers with minimum qualification and teachers with higher and lower teaching experience is the subject for the further verification.

Extroversion and high neurotic personality type along with effective teaching has more influence only in case of entire sample and male teachers. However, extroversion and high neurotic being negative quality in the present study has over influenced on effective teaching to nullify its impact.

When favourable attitude of students towards science and effective teaching of teachers taken together its effect is more in case of female teachers and teachers with higher qualification and higher teaching experience. This shows that, gender, teaching experience and qualification are related to their effect on academic achievement. However, these two variables have failed to bring about the expected change in the independent variable in case of entire sample, male teachers, teachers with minimum qualification and teachers with lower teacher experience. This further implies that, development of favorable attitude amongst the students and building effectiveness in teaching demand higher experience as well as higher qualification for the teachers dealing with science subject.

5.6) Interaction among three selected Variables.

The study also revealed that, there are three way interaction. The introversion and low neurotic personality type, favourable attitude of
students towards science and effective teaching of teachers have jointly exerted more influence on academic achievement in case of entire sample, male and female teachers and teachers with higher teaching experience. But its effect is not significant on the dependent variable in case of teachers with minimum and higher qualification and teaches with lower teaching experience this leads to cross validation of the findings by further researcher.

The introversion and low neurotic personality type and favourable attitude of students towards science have together overcome the negative influence of ineffective of teaching only in case of entire sample and the female teachers. However, the effect of ineffective teaching has dominated the influence of the introversion and low neuroticism personality type and favourable attitude towards science in case of remaining sub groups. Further favourable attitude of students and effective teaching of teachers reduce the adverse effect of extroversion and high neurotic personality type in case of entire sample, male teachers and teachers with higher teaching experience. However, its role in case of other sub-samples may be investigated by further researcher.

Surprisingly unfavourable attitude of the students towards science has weakened the effect of two positive forces like, introversion and low neurotic personality type and effective teaching of teachers in case of the entire sample and sub samples except in case of male teachers. This
shows that male teachers in the teaching profession could overcome the negative impact because of unfavourable attitude on academic achievement through students introversion low neurotic personality type and effective teaching. Lastly, it was interesting to note that introversion and low neurotic personality type of students with male teachers of ineffective teaching of overshadow of negative influence of unfavourable attitude of students. However, these three variables together resulted in insignificant effect on academic achievement in case of entire sample, female teachers with minimum and higher qualification and teachers with higher and lower teaching experience.